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INFLUENZA IN EUROPE

The following information was received by cable from the Health Section of the Secretariat of the League of Nations, January 14, 1927:

Further official telegraphic information shows no unusual prevalence of influenza in Bulgaria, Egypt, Estonia, Finland, Hungary, Latvia, or India. A mild type of the disease is reported in Greece, Rumania, Yugoslavia, and in Poland at Warsaw, Lemberg, and Cracow. The large English towns reported 172 deaths from influenza for the first week of January and 86 deaths from this disease for the preceding week. The disease is decreasing in Geneva, Bern, and Basel, Switzerland.

ACCIDENTS TO CHILDREN FROM BLASTING CAPS

The yearly increases in the number of automobile accidents in this country have brought the number of accidental deaths from that cause to such alarming proportions that other and less frequent accidents causing injury and death are often overlooked, although they are of a type which may be reduced by proper educational and cautionary measures. Of the latter type are accidents to children from blasting caps; and the Institute of Makers of Explosives has undertaken to warn the public of the dangers from these explosives, which, it is stated, cause the death or mangling of 500 children annually. In this educational program the institute, calling upon all health authorities and others interested in health work to bring these facts before the public, has prepared a brief statement regarding the subject. This statement is contained in a circular suitable for broadcasting, which reads as follows:

PROTECTING CHILDREN FROM BLASTING CAPS

There are approximately 500 children crippled each year in the United States by playing with blasting caps which they have picked up in the vicinity of mines, quarries, or in the fields where agricultural blasting has been done.

This means that there are approximately 500 children who will have to go through life with mangled hands, faces, arms, and legs. Some of them are killed.

Blasting caps contain fulminate of mercury, a quick, powerful explosive. It is readily exploded. It will explode when struck by a hammer. The blasting cap will explode when thrown into the fire. It will also explode when children try to extract the contents with a pin, or by holding a lighted match to it, or by thrusting the flaming end of the match into the cap. In the mines and quarries, even, where the men who have to use blasting caps every day ought to know better, there are plenty of mangled hands and other injuries as the result of "crimping" caps on fuses with a jackknife, pointed nail, or any tool that's handy. Many a miner has crippled himself for life in biting the cap on the fuse, and others have filled themselves with copper or have been killed outright by letting the sparks from their hat lamps or pipes drop into an open box of caps. Many blasters continue to bite the caps on the fuse, and think that because they have never exploded them in doing so they never will; but some day they will bite the business end of the cap and cripple themselves for the remainder of their lives. It is much easier, and lots safer, to use a crimper, a tool made for the purpose. Accidentally stepping on a cap will often result in a mangled foot. Sparks, flame, heat, blows, friction—all serve to explode the cap to which they are applied.

Boys often play in and around quarries on Sundays, and sometimes pick up stray caps and start to investigate them. It is the rarest thing that they ever do this without getting hurt. They perhaps know the caps are dangerous, and that a spark or a blow will explode them; but they do not realize just how sensitive they are, how violent is the explosion, or how the pieces of copper fly. Even the name is misleading in this respect. The word "caps" suggests the paper caps used with toy pistols; and because the blasting caps are called by this name it is natural to think that the two varieties belong to the same family. They may; but they bear about the same resemblance to each other that a hungry, man-eating tiger does to the gentle pussycat.

If all the children mangled during the past year by blasting caps had been hurt at one time, what an impression would have been created! But because the accidents are spread all over the country and happen at the rate of only about 40 or 50 a month, nothing is done. Indeed the best thing to be done is to educate the whole population to realize how dangerous these exceedingly useful things are when they are out of their proper place, and what a dreadful thing it means to go through life crippled or blinded for lack of a little care and knowledge.

A blasting cap is a copper shell about a quarter of an inch in diameter and an inch or two long, half full of fulminate of mercury. This fulminate is the most sensitive and about the most impulsive explosive in common use. Blasting caps contain anywhere from

15 to 30 grains of it; primers for firearm cartridges usually contain not more than one-fifth grain. That's what the hammer or firing pin of a gun or pistol hits to ignite the powder in the shell. A blasting cap is meant to work the other way. The powder from the fuse ignites the fulminate in the blasting cap, and it explodes with terrific force and detonates the dynamite. The explosion of the fulminate is so exceedingly quick that the flying particles of copper will imbed themselves in iron a foot away. They will blow a hole entirely through a steel plate one-sixteenth of an inch thick. A box of caps will blow a hole through a two-inch oak plank. One cap will blow a child's hand off. Lingg, one of the Chicago anarchists, committed suicide by biting a blasting cap between his teeth.

The point to be remembered is that when a blasting cap goes off it does great damage locally. There is no escaping its effects. Among all the accidents reported from playing with blasting caps there are only two or three in which somebody was not hurt.

Electric blasting caps are as strong as ordinary blasting caps; but, as the capsule or shell is sealed up with a sulphur plug through which the wires are carried down to the fulminate, not so many accidents occur in playing with them. They are generally dipped in dark-colored wax, and are not such attractive playthings as the bright copper blasting caps; but "they get there just the same." Amateur electricians are earnestly advised to bury the electric cap a foot or two in the earth before trying to pass electric currents through the wires, and they had better not do it then. Don't open it up to see what's in it! Don't carry caps around in your pockets! Don't take them home with you! Don't leave them where children can get at them! Don't fool with them!

PUBLIC HEALTH SERVICE AWARDED MEDALS FOR HEALTH EXHIBIT

The United States Public Health Service has recently been advised by the jury of awards of the National Sesquicentennial Exposition that it has been awarded four gold medals for various features of its exhibit at the exposition in Philadelphia during the past summer.

These medals were awarded as follows: For chlorinating machines using chlorine gas for destroying germs in drinking water; for life-like vaccination models showing types of reaction to smallpox vaccination; for selection of health subjects and neatness of display, collective exhibit; for modern unit for all dental surgery.

The United States Public Health Service has participated in all of the great expositions that have been held in the United States since 1900. Medals were awarded to the Service for its exhibits at expositions held in Jamestown, St. Louis, Buffalo, San Francisco, and Philadelphia.

The material which the Public Health Service had on display at Philadelphia is now being placed in position in one of the Service buildings in Washington, D. C., so that visitors to the National Capital may have an opportunity of seeing this exhibit. The various models, charts, and mechanical devices are designed to show the progress of preventive medicine.

In addition to this health exhibit of the Public Health Service, there is on display in the National Capital an extensive health exhibit in the Old National Museum in a special section called "The Hall of Health." This National Museum exhibit was prepared and furnished by various official and voluntary health agencies, and is highly instructive to anyone interested in modern methods of promotion of physical fitness.

FORCE AND EFFECT OF HEALTH REGULATIONS

In the case of State *v.* Quattropani, an abstract of which was published in the Public Health Reports of September 17, 1926, page 2030, the Supreme Court of Vermont upheld an order of the State board of health made under a statute authorizing the board to make regulations. The order thus upheld was as binding as if its provisions had been enacted into law by the legislature, and is but another illustration of the established rule that reasonable health regulations adopted pursuant to statutory authority have all the force and effect of a legislative enactment. In this connection the following portions of the court's opinion in the case are of interest:

> That the public health is a proper subject for police power protection, and that that power can lawfully be delegated to the State board of health, are both unquestioned and unquestionable. And it is not to be forgotten that its orders, when made under statutory authority and in conformity with the law, have all the force and effect of legislative enactments. * * *
>
> A notice to the respondent in advance of this order was no more required than such a notice would have been if the provisions of the order had been embodied in a special act of the legislature. In either case, he would be entitled to such notice, if any, as the statute required, and none other. His ignorance of the order, if shown, would not affect his situation. * * *
>
> * * * This order is presumptively valid (State *v.* Morse, supra), and it must be enforced unless it is made manifest that it has no just relation to public health protection, or that it is a plain, palpable invasion of constitutional rights. * * * If either of these infirmities appear, it is our duty to declare its invalidity. * * *
>
> We can not say that as matter of law this order was unreasonable and arbitrary. We are aware that cases are to be found in which similar orders have been condemned, but we see no reason for departing from a policy fully established by our decisions of approving a generously free exercise of the power to safeguard the health of the public. In sustaining such regulations as the one before us, we are sufficiently supported by the decision. * * *

STUDIES ON THE ETIOLOGY OF EPIDEMIC ENCEPHALITIS

II. VIRULENT BACTERIA CULTIVATED FROM SO-CALLED HERPETIC AND ENCEPHALITIC VIRUSES

By ALICE C. EVANS, Associate Bacteriologist, Hygienic Laboratory, United States Public Health Service

In a recent publication (Evans and Freeman) there was presented a report of studies on a pleomorphic organism obtained from the midbrain and heart blood at necropsy, and from the nasal washings a few days before death, in a case of epidemic encephalitis. The organism would pass through porcelain filters capable of holding back ordinary bacteria. Detailed description was given of the streptococcus form of the organism, the form in which virulence was found to be highest and most stable. The disease which the streptococcus caused in monkeys and in rabbits was described. A spore-producing rod form of the organism was merely mentioned.

It appeared that the next step to be taken should be an attempt to correlate our results, which confirmed those of certain other workers, with the results of those investigators who have obtained from cases of epidemic encephalitis a virus which they carry from animal to animal without the cultivation of organisms between passages.

The works of Doerr and his collaborators and of Blanc and Caminopetros, confirmed by others, have shown that a filterable virus capable of producing encephalitis in rabbits can be obtained from the vesicles of herpes. Doerr and Schnabel, Levaditi, Harvier and Nicolau, Flexner and Amoss, and Takaki have shown further that the viruses of epidemic encephalitis and of herpes are immunologically related. Levaditi and his coworkers believe that the herpes virus and the encephalitis virus are varieties of the same organism, differing only in degree of pathogenic activity. Zinsser and Tang were unable to confirm the immunological relationship between the encephalitis and herpes viruses, but they were able to modify the herpes virus disease in rabbits so that it simulated many of the clinical features of human encephalitis. Thus there is general agreement as to the similarity of the herpes and encephalitis viruses. The virus of herpes therefore appeared to offer good material for bacteriological study in connection with the epidemic encephalitis problem.

Requests were made to several laboratories where herpes or encephalitis virus had been studied. In response to these requests, six strains of virus were received, only one of which came from a case of encephalitis.

The writer is indebted to those named below for their courtesy in sending samples of virus.

VIRUSES

Herpes virus No. 810 was received from Dr. Hans Zinsser, Harvard University Medical School, Boston, Mass. The virus received was in the twenty-eighth passage.

Herpes virus A was received from Dr. Charles E. Simon, Johns Hopkins University, Baltimore, Md. It was obtained from a herpetic vesicle on an otherwise healthy subject.

Virus Beckley and virus H. F. were received from Dr. Simon Flexner, Rockefeller Institute, New York City.

Virus Beckley was obtained from the cerebrospinal fluid of a syphilitic patient who had been under observation over a long period, and had never shown or complained of symptoms other than those referable to the syphilitic infection. This virus is described by Flexner and Amoss in *The Journal of Experimental Medicine.* (Vol. 41, 1925, pp. 215–231.)

Virus H. F. was obtained from a fresh herpetic vesicle on the lip of a subject very prone to attacks of febrile herpes. It is described by Flexner and Amoss in *The Journal of Experimental Medicine.* (Vol. 41, 1925, pp. 233–244.)

Virus H_4 and virus E. $L._1$ were received from Dr. J. R. Perdrau, Medical Research Council, London, England.

Virus H_4 was obtained in 1922 from vesicles on the lips of a woman who was suffering from an ordinary cold in the head. It is described by Perdrau in *The British Journal of Experimental Pathology.* (Vol. 6, 1925, pp. 41–52.) The sample received was in the sixty-second passage.

Virus E. $L._1$ was obtained from the brain of a case of acute encephalitis lethargica. It is described by Perdrau in *The British Journal of Experimental Pathology.* (Vol. 6, 1925, pp. 123–128.) The sample received was in the nineteenth passage.

Rabbits inoculated intracerebrally with emulsion of any one of the six viruses developed the symptoms described by Blanc and Caminopetros, Flexner and Amoss, Perdrau, and other workers—salivation, gnashing of teeth, tremors, excitability, circling movements, somersaulting, and rhythmical movements, such as raising and lowering one foot. Death occurred on the third to the eighth day after inoculation. Of the six strains, virus No. 810 was found to be the most rapid in its action, causing death generally on the third day when 0.25 cubic centimeter of a 10 per cent emulsion of virus was inoculated intracerebrally.

BACTERIOLOGICAL INVESTIGATIONS

Smears of the brains of rabbits which died of the virus disease were stained with Gram-safranin and examined for bacteria. On some slides nothing resembling bacteria could be found in a careful search. On other slides prepared with the same brain, in some cases certain areas could be found in which there were scattered clumps of bacteria and isolated individuals. Figure 1 shows a clump of bacteria in a smear prepared with the brain of a rabbit inoculated with virus

Beckley. This rabbit was the first through which the virus was passed by the writer. Under the microscope the compact masses which appear as black spots in the photograph are readily seen to be made up of bacteria. Numerous similar clumps of these small irregular forms could be found within a limited area of the smear, and by diligent searching a few cocci in pairs or small clusters could be found widely scattered over other parts of the smear. Thus it was determined that bacteria were present in the brain; yet when planted by ordinary methods no growth was obtained. Cultures were obtained, however, by planting meat medium heavily with emulsion, as described later.

Figure 2 shows a small cluster of diplococci in a smear prepared with the brain of a rabbit inoculated with virus H. F. This also was in the first animal passage of the virus after it was received by the writer. Long searching was necessary to find bacteria on this slide, but several clusters of diplococci similar to the one photographed were found. Pieces of this brain were planted without success, but cultures were obtained by planting meat medium heavily with an emulsion of the brain.

TECHNIQUE

The media used in this study were the same as those described in the previous paper. The description of the meat medium will be repeated here, because its use is believed to be important for success in the cultivation of bacteria from the virus. Ordinary beef infusion broth is prepared, and the hydrogen ion concentration is adjusted to pH 8.0. Instead of discarding the meat from which the broth is made, the ground meat particles are placed in the tubes to a depth of about 1 inch. Sterilization is at 15 pounds for 1½ hours. During the sterilization the hydrogen ion concentration is reduced to about pH 6.8. An emulsion of about 10 or 15 per cent of virus in salt solution is prepared, and the meat medium is planted with 1 or 2 cubic centimeters of emulsion per tube.

With the use of this method, organisms of the same morphology as those obtained from the case of encephalitis and described in the earlier publication were cultivated from all six of the viruses in both the streptococcus and the spore-producing rod forms. In some cases the cultures were obtained directly from the glycerinated virus as received from the sender. Thus the streptococcus was cultivated from viruses No. 810 and H. F., and the spore-producing rod was cultivated directly from viruses No. 810 and Beckley. In order to cultivate these organisms from the remaining viruses it was necessary to secure fresh specimens by animal passage.

Cultures of either the streptococcus or the rod form could be obtained sometimes by planting filtrates of the brain emulsion. For the filtration experiments an emulsion of about 5 per cent of brain

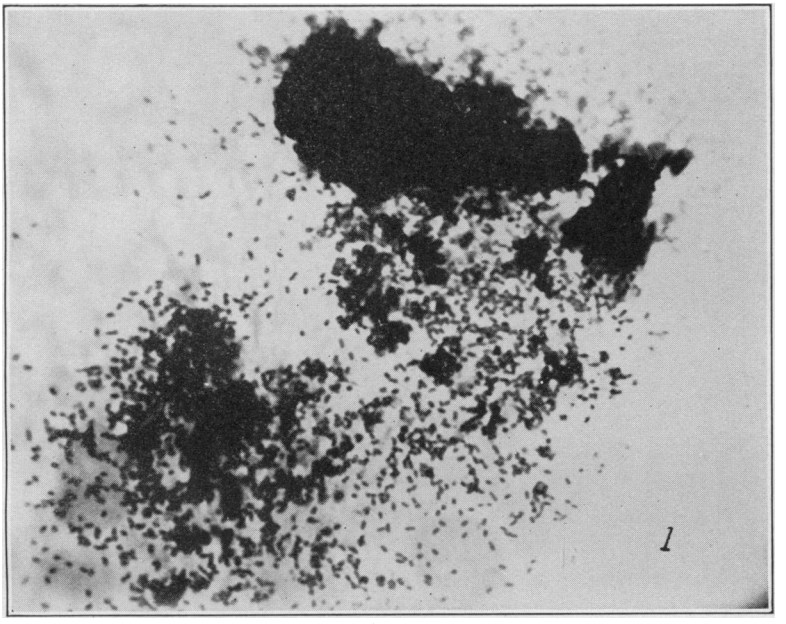
in saline solution was prepared. It was centrifugated at low speed to throw down the coarse particles, leaving the supernatant fluid slightly turbid. Growth from a young agar culture of *Serratia marcescens* (*Bacillus prodigiosus*) was smeared over the candle of a Berkefeld N filter, and then the emulsion was drawn through the filter by means of a water pump. Meat medium was planted heavily with the filtrate—usually with 2 or 3 cubic centimeters per tube. Vitamine agar slopes were also planted with about 0.5 cubic centimeter of filtrate. The filter was considered efficient if *S. marcescens* failed to grow in the cultures.

Both the streptococcus and the spore-producing rod form retain their ability to grow on ordinary media after passage through rabbits, provided death occurs within two or three days after inoculation. If, however, the disease is prolonged, it is usually necessary to plant an emulsion of the brain in meat medium to recover the organism.

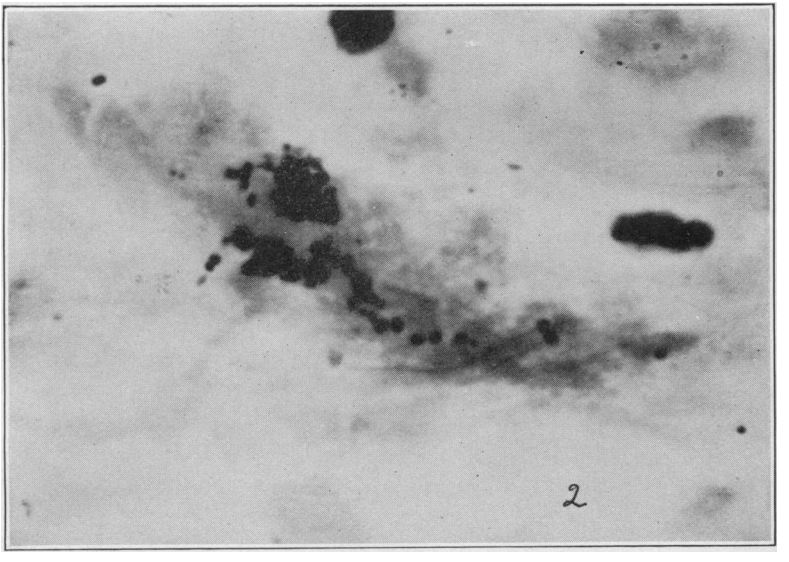
The virulence of the streptococci from the six strains of virus was notably less than that of the streptococcus from a case of epidemic encephalitis described in the earlier publication, which killed rabbits when 0.25 cubic centimeters of meat medium culture diluted 1 to 10,000 was inoculated intracerebrally. With the same method the comparative virulence of the various strains of streptococci obtained from the six viruses was determined. The streptococcus from virus H. F. showed the weakest virulence, merely causing slight nervous symptoms in a rabbit injected with undiluted culture. The streptococcus obtained from virus No. 810 showed the highest virulence of the six strains under consideration, causing death in about 25 hours when diluted 1 to 100, but causing no symptoms when diluted 1 to 1,000. It may be recalled here that of the six strains of virus No. 810 was capable of bringing about death most rapidly. The symptoms caused by intracerebral inoculation of rabbits with the strains of streptococci from the viruses were the same as those following intracerebral inoculation with the streptococci from the human case of encephalitis as described in the previous paper.

The streptococcus from virus No. 810, designated P123, was chosen to represent the strains of streptococci from the viruses in further experimental work. As in the case of the streptococcus from human encephalitis described in the earlier publication, P123 usually did not infect rabbits when inoculations were intravenous; but if infection did occur following intravenous inoculation, it was located in the brain and caused the same kind of symptoms as followed intracerebral inoculation with this organism—symptoms which resembled to some extent those following intracerebral inoculation of virus. The protocols for two rabbits are given below:

Rabbit 376.—April 2, 1926: Inoculated intravenously with 0.5 cubic centimeter of culture P123. April 5: The rabbit lies helpless



Bacteria in a smear of the brain of a rabbit inoculated with herpes virus Beckley. Stained with Gram-safranin. (X 1,700, approx.)



Bacteria in a smear of the brain of a rabbit inoculated with herpes virus H. F. Stained with Gram-safranin. (X 2,200, approx.)

on its side, with occasional clonic movements. April 6: No change. April 7, 9.30 a. m.: The movements are weaker; grinding teeth. 4 p. m.: Dead. At autopsy the entire brain was found much congested. There had been a hemorrhage over the region of the midbrain. Meat medium and agar slopes were planted with heart blood, and with pieces of lung, liver, and brain. A series of three vitamin agar slopes were planted with brain without flaming the loop between the plantings, in order to obtain an idea about how heavily the brain was infected. April 9: No growth from heart blood; no growth on agar slopes planted with lung; there is growth of an extraneous organism in the meat medium planted with lung. Agar slopes planted with liver show a few staphylococcus colonies. Meat medium planted with liver is clouded with a mixed culture of staphylococci and small cocci in chains, presumably strain P123. All tubes planted with brain show pure cultures of streptococci with all the characteristics of strain P123. Even on the last tube of the series of agar slopes there are innumerable streptococcus colonies.

Rabbit 464.—Intravenous inoculations with P123 were made as follows: April 29, 1926, 0.125 cubic centimeter (diluted to 2 cubic centimeters in saline solution); May 3, 0.25 cubic centimeter; May 7, 0.5 cubic centimeter; May 10, 1.0 cubic centimeter; May 14, 18, 19, and 20, 2.0 cubic centimeters. May 25: The rabbit runs sidewise, falls down, and rolls over and over. May 26: The rabbit lies in a twisted position. When set on his feet he is able to stand, with head strongly rotated. When placed on the floor he rolls over rapidly. May 27: Weaker. June 5: Rabbit continues to grow weaker. No other change. June 8: Improvement began. At the time of this writing, five months after the development of symptoms, the rabbit is still living, in good condition, except for a strongly rotated head, with right eye directed upward. When placed upon the floor he moves in circles.

The spore-producing rod cultivated from the six strains of virus, which has also been cultivated from a number of human cases of encephalitis, will be described in a separate paper, together with a description of the disease it produces in experimental animals.

SUMMARY

Six strains of so-called virus were studied bacteriologically. Four of these strains were originally from vesicles in cases of herpes, one was from the cerebrospinal fluid in a case of syphilis, and one was from the brain in a case of epidemic encephalitis. Cultures of virulent streptococci, and cultures of a spore-producing rod were obtained from all six strains.

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STERILIZING EFFICIENCY OF ARSPHENAMINE, NEOARSPHENAMINE, AND SULPHARSPHENAMINE IN EXPERIMENTAL SYPHILIS

By CARL VOEGTLIN, Professor of Pharmacology, and H. A. DYER, Assistant Pharmacologist, Division of Pharmacology, Hygienic Laboratory, United States Public Health Service

The ideal of chemotherapy, as conceived by Ehrlich, is the complete sterilization of the infected animal or patient by means of specific drugs. Sterilization, of course, means nothing less than the destruction of *all* parasites in the infected host, i. e., the complete eradication of the disease.

It is a rather astonishing fact that no systematic work has been done so far in order to determine the sterilizing efficiency of arsphenamine and its derivatives in experimental syphilitic infection. Ehrlich and some of his followers confined themselves to the determination of a "clinical cure"; i. e., the complete relief from all symptoms and signs of the disease over a prolonged period of observation. It was only in later years, based on the work of Neisser (1911), and particularly of Pearce and Brown (1922), that investigators began to appreciate the fact that syphilitic infection in rabbits, as in man, often assumes a latent form as a result of inadequate treatment or sometimes even as a result of spontaneous retrogression without any treatment. Special methods are therefore required in order to determine the sterilizing action of drugs in this disease. Two

methods have been proposed for this purpose; first, the so-called reinoculation method, and second, the tissue transfer method.[1]

The *reinoculation method* is based on the fact that reinoculation of an untreated syphilitic rabbit with syphilitic virus several weeks or months after the primary inoculation is not followed by the production of a chancre at the site of the reinoculation; i. e., the tissues in the later stages of the disease develop a certain degree of resistance. It was assumed, therefore, by Neisser (1911) and particularly by Kolle (1922 and 1924) that if reinoculation of a syphilitic animal some time after treatment was followed by the appearance of a chancre, the treatment had sterilized the animal. If, on the other hand, reinoculation did not produce a chancre, then the animal was not considered sterilized by the treatment. Using this method, Kolle (1922 and 1924) came to the surprising conclusion that sterilization of syphilitic rabbits is impossible even with the most intensive treatment with the arsphenamines, if treatment is begun late in the course of the disease. However, Chesney and Kemp (1925) and Voegtlin and Dyer (1925)[2] on the basis of further extensive work arrived at the opinion that the reinoculation test is very difficult of correct interpretation and is, therefore, misleading.

The *tissue transfer method* is now accepted by most workers as the most reliable, though not infallible, method. It rests on the observation that the disease can be consistently transmitted from an infected animal to a normal one by means of a maceration of lymph glands. (Pearce and Brown, 1922.) Production of a chancre in a normal rabbit as a result of the injection of lymph gland maceration from a rabbit having undergone previous treatment, is absolute proof that the treatment did not produce sterilization. On the other hand, failure to produce a chancre in the normal rabbit is good, but not absolute evidence of sterilization for the reason that occasionally a normal rabbit will not respond with a chancre, though the infection is unquestionably transmitted. (Pearce and Brown, 1922; Worms, 1926; Kolle and Schlossberger, 1926; Kolle and Evers, 1926.) These cases of "asymptomatic infection" are fortunately rare and do not exceed 10 per cent of the inoculated animals. As will be shown later, this error can be almost completely eliminated by the adoption of some modifications of the original technic of Pearce and Brown (1922). The results we obtained with this modified technic of tissue transfer are so consistent that they can be regarded as thoroughly trust-

[1] A standardized method for the therapeutic study of compounds in experimental rabbit syphilis has been described by Wakerlin, Lorenz, and Loevenhart (J. Pharmacol. & Exp. Ther., 1925, xxvi, 187). The method is valuable for the study of new compounds of unknown therapeutic action, but for obvious reasons was not needed for our purpose.

[2] An obvious printing error in this paper should be corrected as follows: All broken lines in Tables 1 and 2 under headings "Result of reinoculation" and "Result of inoculation with *T. pertenue*" should be replaced by — (negative sign), thus indicating, in conformity with the text, that these inoculations did not result in chancres.

worthy. Our principal conclusions of fundamental importance are the following:

1. Syphilitic infection in rabbits can be completely eradicated even in the later stages of the disease by a single large dose of arsphenamine, neoarsphenamine or sulpharsphenamine.

2. The minimal sterilizing dose is considerably larger than the "therapeutic dose." The latter is defined as the dose which causes the rapid disappearance of the spirochetes from the primary lesion and the healing of the lesions.

3. The sterilizing action of an equal amount of arsenic in the form of arsphenamine, neoarsphenamine, or sulpharsphenamine is the same.

We shall now proceed to a description of the general plan and the technic of our work, which, it will be realized, is extremely time consuming.

EXPERIMENTAL PART

1. *Inoculation and periodic examination of animals.*—We have made it a rule to select for this work only healthy, vigorous rabbits with well-developed testicles, which have been quarantined for several weeks in separate cages in order to eliminate as far as possible intercurrent infections. But even with this precaution it is impracticable to avoid some deaths during the experiment from intercurrent respiratory infection, especially during the colder season. We, therefore, recommend to inoculate a somewhat larger number of animals than are actually desired for the therapeutic test. They are inoculated into the scrotum with 0.5 cubic centimeter of an emulsion containing numerous spirochetes to the microscopic field. The Nichols strain, originally obtained from the cerebrospinal fluid of a case of neurosyphilis, was employed.

All of the animals are kept under careful observation throughout the course of the experiment, the appearance of chancres and their progress being closely followed. All lesions are examined thoroughly for the presence of spirochetes by dark field examination of the serum.

2. *Treatment.*—Treatment was carried out as a rule about eight weeks after inoculation, at a time when the primary lesions were either still fully developed or had begun to retrogress. The animals were divided into three groups, group A being treated with arsphenamine intravenously, group B receiving neoarsphenamine intravenously, and group C being injected with sulpharsphenamine into the muscles of the thigh.

The doses are expressed as number of cubic centimeters of a 0.01 arsenic equivalent solution per kilogram body weight, a mode of expression which permits a direct comparison of the effectiveness of the three drugs on the arsenic basis. The doses are also given as number of milligrams per kilo.

Different groups were treated with different doses, ranging from 2 to 20 cubic centimeters; the lower dose being on the border of the minimal therapeutic dose. More animals were put on the higher doses in order to obtain a better precision of the minimal sterilizing dose, the low doses serving merely as a guide in the estimation of the relation between sterilizing and therapeutic dose. It is thus seen, that the general plan with regard to dosage is essentially the same as that followed for a number of years in this laboratory in the estimation of the trypanocidal value of arsenicals. We believe that such a plan furnishes the most complete and reliable information concerning the sterilizing efficiency of any chemotherapeutic agent. The drugs were injected in accordance with established clinical technic, with regard to concentration and rate of injection.

The arsphenamine and neoarsphenamine used were manufactured according to the original German patent, the sulpharsphenamine was a product manufactured according to the method of Voegtlin and Johnson (1922). All three products were average products with regard to toxicity and trypanocidal action as established in rats according to the official methods.

The chancres were examined for the presence of living spirochetes (dark field) immediately before and after the treatment.

3. *Tissue transfer tests.*—Some time after complete healing of the lesions and from 6 to 20 weeks after treatment the tissue transfer to normal animals was carried out. We purposely delayed the tissue transfer so long after treatment in order to allow sufficient time for the complete excretion of the drug, and the spreading of the infection in case any spirochetes had survived the treatment. After chloroforming the animals the two popliteal lymph glands were removed aseptically, cut up thoroughly, and suspended in about 1 cubic centimeter of saline. One half of the suspension was injected into the left scrotum of a normal rabbit, the other half into the left scrotum of another normal rabbit. A saline emulsion was also made of the originally infected testicle of the treated rabbit and 1 cubic centimeter of this was injected into the right scrota of both normal rabbits. The transfer rabbits were carefully observed for the occurrence of chancres for a further period of 12 weeks or longer. All suspicious or characteristic lesions were carefully examined, on several occasions if necessary, for the presence of spirochetes (dark field) and only those animals were considered infected in which spirochetes could be found. The positive transfers began to show evidence of infection within 3½ to 10 weeks after inoculation, with an average of 6 weeks. As an additional safeguard, a large number of the transfer animals which had not shown obvious infection (chancre), were inoculated (scrotum) with a heavy suspension of spirochetes in order to demonstrate that these animals were not naturally refractory against the production of primary lesions.

We have good reason to believe that this technic considerably increases the reliability of the test, as will now be shown by an analysis of some of our material with a bearing on this question.

All of 208 transfer rabbits (104 pairs) had survived the 3 to 6 months' period of observation and yielded consistent results, as each rabbit of 39 pairs developed a chancre with spirochetes demonstrable by dark field examination, and each rabbit of 65 pairs remained normal. Forty-two of the positive rabbits developed lesions on both testicles, the one inoculated with lymph gland emulsion and the one with testicular emulsion. Of the 36 rabbits that developed only lesions on one testicle, 20 of the chancres appeared on the testicle inoculated with lymph gland emulsion, while 16 were on the testicle inoculated with testicular emulsion.

Forty-seven rabbits that failed to show evidence of infection after inoculation with lymph gland and testicular emulsion from treated rabbits were inoculated after an interval of five to seven months with a heavy suspension of spirochetes. Forty-one of these rabbits developed typical lesions with spirochetes, 5 remained normal, and 1 died prematurely with an atypical lesion in which no spirochetes could be found.

4. *Toxicity tests.*—In order to obtain an approximate estimate of the relations between the maximal tolerated dose to the minimal sterilizing dose (index of sterilization) the three drugs were injected intravenously into normal rabbits. These animals were kept under observation for six weeks and in case of death were submitted to a careful necropsy in order to determine whether or not death was due to arsenic poisoning.

DISCUSSION OF RESULTS

All previously published data concerning the sterilizing action of arsphenamine, neoarsphenamine, and sulpharsphenamine in which the lymph gland transfer method was used as a criterion are compiled in Table 1. These figures may be used for comparison with our present data, provided the reader realizes that the method of simple lymph gland transfer, using either only one lymph gland or only one transfer rabbit for each treated rabbit, may indicate a higher sterilizing efficiency than if our more rigorous technic is used.

Our present observations are based on 91 syphilitic rabbits treated with arsenicals according to the plan previously outlined. An additional 182 rabbits were used for the tissue transfers, making altogether 273 animals.

The results are summarized in Table 2. In the column headed "Percentage sterilization" are found the data indicating how many of the animals treated with a given dose of a certain arsenical were sterilized as shown by the tissue transfer method. For instance, 100 means that all of the animals were sterilized, and 50 means that only one-half were sterilized.

TABLE 1.—*Summary of all previous observations on the sterilizing action of arsphenamine, neoarsphenamine, and sulpharsphenamine, using the lymph-gland transfer as a criterion of sterilization*

[The Nichols strain was used throughout. Doses are expressed as milligrams per kilo]

Drug	Interval between inoculation and treatment (days)	Treatment	Number of animals	Result of lymph-gland transfer	Reference
Arsphenamine (i.v.)	18	6 mgm. once	2	Not sterilized	Pearce and Brown J. Exp. Med., 1922, xxxv, 39.
Neoarsphenamine (i. v.).	18	9 mgm. once	3	do	
Arsphenamine (i.v.)	130	10 mgm. once	1	Sterilized	Nichols and Walker J. Exp. Med., 1923, xxxvii, 525.
	174	10 mgm. twice	1	do	
	110	10 mgm. four times	1	do	
Neoarsphenamine (i. v.).	130	15 mgm. once	1	do	
	125	15 mgm. twice	1	do	
Do	70	15 mgm. once	1	do	Voegtlin, Armstrong, and Dyer, Public Health Reports, 1923, xxxviii, 1815.
	70	36 mgm. once	1	do	
Sulpharsphenamine (s. c.).	70	27 mgm. once	1	do	
	70	50 mgm. once	1	do	
Arsphenamine (i.v.)	127	10 mgm. six injections at weekly intervals.	10	do	Chesney and Kemp, J. Exp. Med., 1924, xxxix, 553.
Do	41–50	do	13	do	Chesney and Kemp, J. Exp. Med., 1925, xlii, 17.
	181–291		13	do	
Neoarsphenamine (i. v.).	56–63	75 mgm. three injections at weekly intervals.	(?)	do	Wakerlin, Lorenz, and Loevenhart, J. Pharmacol. and Exp. Ther., 1925, xxvi, 187.

TABLE 2.—*Comparison of the sterilizing efficiency of arsphenamine, neoarsphenamine, and sulpharsphenamine in experimental syphilis in rabbits*

Arsphenamine				Neoarsphenamine				Sulpharsphenamine			
Dose		Number of animals	Percentage sterilization	Dose		Number of animals	Percentage sterilization	Dose		Number of animals	Percentage sterilization
Cubic centimeters	Milligrams			Cubic centimeters	Milligrams			Cubic centimeters	Milligrams		
2	4.7	1	0	2	8.0	1	0	2	7.0	3	0
3	7.0	2	50	3	12.0	2	0	3	10.5	3	33
4	9.4	6	33	4	16.0	6	50	4	14.0	6	0
								5	17.5	3	33
6	14.0	6	83	6	24.0	5	40	6	21.0	5	60
10	23.5	7	86	10	40.0	6	100	10	35.0	7	100
20	47.0	7	100	20	80.0	7	100	20	70.0	8	100

The dose is given as number of cubic centimeters of a 0.01 arsenic equivalent solution or as number of milligrams per kilogram body weight.

The first way of expressing doses has the advantage of permitting comparison of the sterilizing effect of the *same* amount of arsenic in three different forms.

It will be noted that with all three drugs the sterilizing efficiency increases with an increase in the dose. The results obtained with the smaller doses are somewhat inconsistent, but this is easily explained by the fact that only a small number of animals were used in the lower range. This range includes the so-called *therapeutic dose*, the dose which causes the rapid disappearance of the spirochetes from the lesions and the healing of the chancres without, however, sterilizing

the animals. It is about 2 cubic centimeters of a 0.01 arsenic equivalent solution per kilo for all three drugs. Some of the animals treated with the next two higher doses (3 to 4 c. c., respectively) are sterilized by the treatment. In order to sterilize *all*, or practically all, animals, 10 cubic centimeters must be used. Of the 20 animals treated with this dose only 1 treated with arsphenamine failed to be sterilized. We do not attribute any particular significance to this exception, however, and we feel unjustified in assigning arsphenamine a lower efficiency for this reason. We may therefore consider 10 cubic centimeters as the *minimal sterilizing dose* for arsphenamine, neoarsphenamine, and sulpharsphenamine. As this dose is doubled (20 c. c.) it is seen that every one of the 22 animals is sterilized.

A single dose treatment is a severe test of the sterilizing efficiency because the drug has to penetrate the rather large chancre and must kill off all spirochetes therein before elimination has reduced the drug concentration within the body below the minimal effective parasiticidal concentration.

It is interesting to note that the sterilizing efficiency of sulpharsphenamine injected intramuscularly is just as good as that of arsphenamine and neoarsphenamine given intravenously.

The above-mentioned facts are of fundamental importance for a correct understanding of the chemotherapy of syphilitic infection for several reasons.

First. There can no longer be any doubt that the essential relation of size of dose to sterilizing effect, a relationship which had previously been shown to exist in the case of these arsenicals in experimental trypanosomiasis, also holds good in experimental syphilis. The contention of the few authors who still persist in attributing the action of these arsenicals in the treatment of syphilis as being essentially due to a stimulation of the production of immune bodies, rather than to a direct action of the drugs (or more correctly, their metabolism products, arsenoxides) on the parasites, is therefore conclusively refuted. How otherwise could this well-defined sterilizing dose be explained than that a definite minimum concentration of the arsenical is needed to kill off every one of the parasites in the infected host.

Second. A few of the animals treated with doses smaller than the minimum sterilizing dose are sterilized. This finding agrees with similar observations made in the treatment of experimental trypanosomiasis and is best explained by the assumption that in these animals the fate of the drugs in the body (retention, distribution, and metabolism) from a quantitative standpoint was especially favorable for the production of the full parasiticidal action.

Third. For all practical purposes it must be conceded that the minimal sterilizing dose of the three drugs is the same in terms of

arsenic used; or, in other words, *the sterilizing action of these drugs depends entirely on the amount of arsenic injected, irrespective of whether this arsenic is in the form of arsphenamine, neoarsphenamine, or sulpharsphenamine.* Parenthetically it may be added that the minimal sterilizing dose expressed in terms of milligrams per kilo is of course not the same, as all three drugs, and especially neoarsphenamine and sulpharsphenamine, contain a considerable and variable amount of impurities. On the weight basis the minimal sterilizing doses per kilo body weight are as follows: Arsphenamine, 23.5 milligrams; neoarsphenamine, 40 milligrams; and sulpharsphenamine, 35 milligrams. It is important now to call attention to the fact that the sterilizing efficiency of these three drugs requires for its final appraisal data on the ratio of the maximal tolerated dose to the minimal sterilizing dose. This relation we propose to designate as the *index of sterilization.* It is obvious that a large index of sterilization indicates a large margin of safety, and, vice versa, a small index of sterilization, a small margin of safety. The data bearing on this point are found in Table 3. They show that the index of sterilization is most favorable in the case of sulpharsphenamine, less so in the case of neoarsphenamine and least with arsphenamine.

TABLE 3.—*Maximal tolerated dose, minimal sterilizing dose and index of sterilization*

[The doses are expressed in numbers of cubic centimeters of a 0.01 arsenic equivalent solution per kilo. The figures in parentheses give the doses in terms of milligrams per kilo]

	Arsphenamine	Neoarsphenamine	Sulpharsphenamine
Maximal tolerated dose	27 (63)	40 (163)	60 (208)
Minimal sterilizing dose	10 (23.5)	10 (40)	10 (35)
Index of sterilization	2.7	4	6

Fourth. The present data furthermore indicate clearly that syphilitic rabbits can be sterilized even by a single large dose of these drugs at an advanced stage of the disease. This is contrary to the results obtained by means of the reinoculation test as a criterion of sterilization. It may be recalled that Chesney and Kemp (1925) and Voegtlin and Dyer (1925) confirmed earlier observations of Kolle (1922, 1924) in showing that syphilitic rabbits subjected to treatment, under the same conditions as those obtaining in the present work, on reinoculation did not respond with the production of chancres. These workers concluded, contrary to Kolle, that failure to produce chancres on reinoculation of treated rabbits was not conclusive proof that the animals had not been sterilized by the treatment. After all, it can not be emphasized too strongly that the reinoculation test as a criterion of the effect of treatment tells only one thing; i. e., whether or not the testicular tissues are refractory to the production of a chancre; it is *not* an indication as to whether

or not a latent infection has been produced by the reinoculation. The discrepancy between the results obtained by the tissue transfer method and the reinoculation test may be explained by the assumption that adequate treatment of syphilitic rabbits late in the disease permits the animal to develop an abnormally high degree of tissue resistance, so that reinoculation results in a latent infection without primary lesions (asymptomatic infection). It will be recalled that a small percentage of normal, untreated rabbits evidently also possess a sufficient degree of tissue resistance to a primary inoculation, as shown by the fact that they do not develop chancres, though they unquestionably are infected, as can be demonstrated by a positive tissue transfer test. Chesney and Kemp (1925) on the other hand, are inclined to interpret their results by the assumption of a true general immunity to reinfection, this immunity having been established by sterilizing treatment late, but not early, in the disease. At all events, it will be admitted that the correct interpretation of the reinoculation test is an extremely difficult matter, involving, as it does, the still obscure question of immunity to syphilitic infection. We have therefore every reason to regard the tissue transfer test, especially in the form advocated by us, as a far more reliable criterion of sterilization from treatment.

Practical bearing on control of syphilis in man.—There can be no question that the discovery of the arsphenamines has furnished powerful weapons for the control of syphilis. It will also be admitted that the eradication of this disease depends in large measure upon the question as to whether or not syphilitic individuals can be sterilized by treatment at least in early syphilis. For Moore and Keidel (1926) correctly state that "the best method of treatment of paresis, tabes, cardiovascular and visceral syphilis is not the treatment of these conditions, but their prevention by means of thorough early treatment directed against the etiological factor." The difficulty is that so far no method has been devised to determine if a patient has actually been sterilized by treatment. Reinfection is certainly not a practical method and even this criterion must be used very cautiously (Stokes, 1926). The careful work of Moore and Keidel (1926) and Moore and Kemp (1926) dealing with the problem of "clinical cure" of early syphilis is most important, but these workers frankly admit that the question of sterilization is something quite different from clinical cure. And Stokes sums up the present status of this subject thus: "Radical 'cure' is at this day a matter of faith, and a matter of faith it will remain until a full generation of men instead of a decade's worth has sustained the critical review of the microscopic as well as the gross pathologist." [3] It is, therefore, of con-

[3] It is our opinion that the development of a method for the determination of sterilization in man is not so hopeless as may appear at first. It is quite possible that work with the lymph gland transfer method such as carried out by Eberson and Engmann (1921) and modified according to the suggestions of Worms (1926), might lead to a method which could at least be applied to a sufficient number of selected cases in order to determine the sterilizing efficiency of a given plan of treatment.

siderable importance that the fact has been thoroughly established that sterilization is possible in even late *experimental* syphilis, particularly as the work of recent years has shown that the pathology of syphilitic infection in rabbits closely resembles the disease in man with regard to generalization and latency.

Our findings again emphasize the importance of intensive treatment to the point of maximum toleration. The data are also of some value in connection with the long-debated question as to which one of the three arsphenamines has the greatest sterilizing action. There can be no question that in rabbits, taking the results as a whole, there is no difference between the three drugs (arsenic basis), but it must be remembered of course that in the clinical use certain other factors, such as the relative number of toxic reactions (dermatitis, encephalitis, jaundice, etc.), from therapeutic doses must be taken into account.

In recent years a number of authors (see Buschke, 1924 and 1925) have objected to the intensive treatment of syphilis on the ground that the arsphenamines are supposed to destroy immune body formation and thus interfere with sterilization. No satisfactory evidence has been produced in support of this view and the experimental data presented in this paper certainly contradict it. In the case of arsphenamine, for instance, it will be noted that the sterilizing efficiency does *not* decline with an increase of the dose to more than two-thirds of the maximal tolerated dose.

In conclusion, it must again be emphasized that the results described in this paper refer only to experimental syphilis in rabbits and of course are not to be regarded as directly applicable to the clinical use of these arsenicals.

CONCLUSIONS

1. Sterilization of syphilitic rabbits late in the disease can be accomplished by means of a single large dose of either arsphenamine, neoarsphenamine, or sulpharsphenamine.

2. The sterilizing efficiency increases with an increase in the dose and does not decline when the minimal sterilizing dose is exceeded. The data therefore indicate the advisability of intensive treatment and contradict the view that intensive treatment interferes with sterilization on account of its alleged interference with immunity reactions.

3. The minimal sterilizing dose of arsphenamine, neoarsphenamine, and sulpharsphenamine is identical in terms of absolute amount of arsenic. The intramuscular injection of sulpharsphenamine is just as effective as the same amount of arsenic in the form of arsphenamine or neoarsphenamine injected intravenously.

4. The "index of sterilization"—i. e., the ratio of maximal tolerated dose to minimal sterilizing dose—is most favorable in the case of

sulpharsphenamine, less so with neoarsphenamine, and least with arsphenamine.

5. A modification of the tissue transfer test is described, which increases the reliability of this method as a criterion of sterilization from treatment with these drugs.

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PUBLIC HEALTH ENGINEERING ABSTRACTS

Studies on Lactose Fermenting Bacteria. Fred Berry, chief, division of laboratories, Ohio State Department of Health, Columbus, Ohio. *American Journal of Public Health*, vol. 16, No. 7, July, 1926, pp. 700–705.—(Abstract by M. S. Foreman.)

This study is the last of a series of three articles on lactose fermentation. Following are the principal points considered in the present study: First, whether colon group bacteria multiply appreciably in water at high temperatures; second, whether they die off much more rapidly in uniced than in iced samples of water of different sanitary quality; and third, whether the bacterial count either at 20° or 37° C. has much significance when determined on either iced or uniced samples.

Two tables are given which show the comparison of the iced and uniced samples, (1) incubated at 20° and 37° C., and (2) relative percentages of methyl red + and Voges-Proskauer −, and a third table which compares ice-box stored samples with those kept at room temperature.

The result of this study shows the following: (1) The number of colon group bacteria in samples of ground water did not change materially in the first 48 hours after collection regardless of whether

the samples were iced or kept at ordinary temperatures—samples shipped without ice packing will yield dependable results; (2) the change in total bacterial content was more marked at ordinary than at ice-box temperatures; (3) colon group organisms in natural ground waters at ice-box and ordinary temperatures showed no increase in number, but showed a gradual decline; (4) the results obtained show that the use of uniced containers seems justifiable.

Keeping an Old Filtering Plant Up to Date. W. H. Lovejoy, superintendent of filtration, Louisville (Ky.) Water Co. *Water Works Engineering*, vol. 79, No. 21, November 1, 1926, p. 1403.—(Abstract by William L. Havens.)

This article enumerates some of the troubles experienced in operating the Louisville purification works, this being one of the older filtration plants which lack many of the refinements of modern design. On account of the distribution system being unmetered, the plant is carrying a 60 per cent overload in capacity. Also, because of extreme river conditions and the extreme plant demand, the high turbidity and bacterial content of the raw water have resulted in the use of double coagulation, increased chlorine dosage, lessened filter rates, and the application of copper sulphate. Many of the minor mechanical troubles about the plant have been solved by the local plant operators. In addition, several major improvements have recently been made in an effort to keep the plant up to date. Dry feed alum machines have been installed; the sand and gravel from the filter units have been rewashed, rescreened, and replaced; new filter equipment has been installed; and the settling basins have been cleaned. The author points out the fact that failure to solve the more serious problems, such as those of microorganisms and odors and tastes, is due to the fact that most purification plants do not have sufficient personnel to carry on the necessary research experiments along with the routine laboratory work.

Water Supply and Purification. Committee report presented at the Conference of State Sanitary Engineers, June, 1926. *Engineering and Contracting*, vol. 65, No. 9, September, 1926, pp. 431–432.—(Abstract by C. C. Ruchhoft.)

There has been an increase in the movement of holding conferences on water purification under the auspices of the various State departments of health. Another development has been the increasing recognition by the courts of the liabilities of the owners of both public and private water-supply utilities. In some States the courts have also recognized the responsibility of the owners of water supplies to official State bodies for the proper sanitary protection of the supplies. Among the technical developments of 1925 were the appearance of the Manual of American Water Works Practice and the attention given to the subject of chlorophenol tastes in water supplies.

Researches on Hookworm in China. W. W. Cort, J. B. Grant, N. R. Stoll, and others. *American Journal of Hygiene*, Monographic Series No. 7, October, 1926. (Abstract by D. L. Augustine.)

This is an extensive report of 398 pages on the hookworm situation in China and includes the following articles: (1) Problems and methods of attack, by W. W. Cort, N. R. Stoll, and J. B. Grant; (2) A discussion of certain features of the geography of China in relation to the hookworm problem, by N. R. Stoll and W. W. Cort; (3) Distribution of hookworm infestation and disease in China, as shown by the literature and answers to questionnaires, by W. W. Cort, J. B. Grant, and N. R. Stoll; (4) Significance of hookworm infestation in North China, by J. B. Grant, W. W. Cort, and W. S. Kwei; (5) Hookworm infestation studies in Wuchang, Hupeh, by N. R. Stoll, C. McA. Wassell, and W. S. Kwei; (6) Hookworm survey of hospital in-patients, students, and servants in Soochow, Kiangsu, by N. R. Stoll, H. W. Tseng, and K. H. Li; (7) Factors influencing hookworm infestation in Kwangtung Province, by W. W. Cort, F. Oldt, W. W. Cadbury, and L. N. Jeu; (8) An epidemiologic study of hookworm disease in the mulberry districts of the Yangtze Delta, by W. W. Cort, J. B. Grant, N. R. Stoll, and H. W. Tseng; (9) Rice cultivation and hookworm infestation, by W. W. Cort, J. B. Grant, N. R. Stoll, and H. W. Tseng; (10) The relation of the cultivation of cotton to the spread of hookworm infestation, by J. B. Grant, W. W. Cort, and H. W. Tseng; (11) An experimental study of vegetable cultivation and hookworm infestation, by W. W. Cort; (12) On the economic value of night-soil in China, by N. R. Stoll; (13) Studies on the viability of hookworm eggs in stored night-soil in South China, by F. Oldt; (14) Soochow studies on the viability of hookworm eggs in stored night-soil, by Norman R. Stoll; (15) General summary of results, by W. W. Cort, J. B. Grant, and N. R. Stoll.

The researches reported in this series of papers involve the use of Baemann's apparatus for the isolation of infective hookworm larvæ from soil and the Stoll ova count technique for counting helminth ova in feces. Epidemiologic studies consist of (1) the estimation of the degree of hookworm infestation by the ova count method, (2) the study of soil pollution by surveys, and (3) the determination of the distribution of soil infestation by the examination of soil samples with the isolation apparatus. Careful studies were also conducted on the methods of fertilization of the principal crops of China and the study of soil infestation produced in the cultivation of crops under experimental conditions. The investigation includes both field studies and experimental researches.

Climatic conditions of North China were found not favorable for the spread of hookworm infestation, and there the disease is of no appreciable medical or public-health significance. Hookworm dis-

ease has a wide distribution in Central and South China, but there are only a comparatively few areas where it is one of the major public-health problems. This situation is due to the fact that there is a great variation in the degree to which the use of night-soil on different crops spreads the infestation. Of the two types of night-soil fertilization used in China, (1) dry and (2) wet, the latter is almost universally employed in those parts where climatic conditions are favorable to hookworm dissemination.

Rice cultivation as carried on in China does not spread hookworm infestation. The use of night-soil on rice fields is considered as an important hookworm control measure, as experiments show that fertilization of rice under water with night-soil gives an unfavorable medium for the development of soil infestation. Only a few of a large number of hookworm ova deposited in this environment lived as long as two weeks. Surveys made in areas where the people were almost exclusively engaged in the cultivation of rice showed almost no hookworm infestation.

Surveys of the human population of cotton districts of Nantungchow showed a universal light infestation which was subclinical in character. No evidence was obtained that the cultivation of cotton in China is an important source of hookworm disease.

In the fertilization of vegetable crops in China, the night-soil is usually used very much diluted, so that its application serves for watering as well as for fertilization. It is either poured around the individual plants, along the rows, or scattered over the whole surface of the plot, and is usually applied during the early growth period of the vegetable. Experimental evidence indicated that under most conditions the use of human feces as fertilizer for vegetable crops can be only a slight source of hookworm infestation.

In the silk-producing sections conditions appeared almost ideal for the dissemination of hookworms during the picking of the mulberry leaves. Although it is customary to store night-soil for a considerable period before use, the need of forcing the leaves after the first picking in May to prepare food for the large summer brood of silkworms puts such a strain on the supply of night-soil that almost all that is available is utilized. This insures the presence of a sufficiently large number of viable hookworm eggs to produce concentrated soil infestation, since recently collected night-soil will be used as well as that which has been stored for varying periods. In the next place, in order to insure rapid penetration of the fertilizer into the soil, the ground is usually turned and the clods are broken up. This is done with especial care around each tree, and the night-soil, instead of being spread widely over the field, is poured close to the base of the tree. Often as much as a large bucketful will be divided between three or four trees. The pouring of the

material onto the turned-up soil or its shallow burial actually simulates the culture conditions which we have found to be most satisfactory in the laboratory for obtaining the development of hookworm larvæ. Further, the cultivation, fertilization, and the second picking of the leaves, coming during the early summer rainy season when the ground is almost constantly soaked, insure warm moist conditions for the development of the larvæ. The pickers enter the fields from two weeks to a month after the fertilization, which would be at the peak of the intensity of the soil infestation. The amount of rainfall at this time practically insures that, on some of the days of picking, the soil in the fields will be muddy, when the adhering of the sticky loam soil to the bare feet and the complete soaking through of the flimsy reed sandals which field workers wear, give ideal conditions for the penetration of the larvæ. Finally, the fact that leaves are picked off individually or cut off with scissors at this picking makes it necessary for the pickers to stand for considerable periods of time close to each tree. Although some infestation probably takes place under other conditions and at other times, the evidence from the soil infestation studies and the prevalence of ground itch makes it practically certain that a very large percentage of the infestation comes at this time. Consequently the severity of the hookworm disease in this district is due to the few days' contact each year with the infested mulberry fields during the second picking of the leaves.

This not only shows how the cultivation of mulberry trees may be an important factor in the spread of hookworm disease, but illustrates very definitely as well the factors which operate in the dissemination of hookworm by the use of night-soil as a fertilizer. It also emphasizes the necessity of a careful study of the details of crop cultivation in attempting to define the causes operating in the epidemiology of hookworm disease in any region where the human excrement is returned to the fields as fertilizer. Hookworm disease in China is, therefore, not associated in a general way with the methods of fertilization, but in a particular way with the methods employed in certain crops. The control problem, therefore, is not one of rural sanitation or of attempting to modify the general habits of the farmers in the use of the fertilizers, but must center around attempts to modify the particular methods employed in the use of the fertilizer on the crops particularly implicated.

Experiments have shown that when hookworm ova are present in night-soil and stored according to the "wet method," the number of viable ova present depends on the length of time of storage. Over 95 per cent are killed in about one month during the summer temperatures of the Soochow region, and practical elimination of the ova occurs in an additional month.

The mixture with urine which normally occurs to some extent in the collection of night-soil tends to accelerate the death rate of the ova. Mixing of lime with stored night-soil is a control method of great value. When introduced into storage containers in the ratio of from 1:10 to 1:500 to the total contents, practically all the hookworm ova are rendered incapable of development in from 6 to 12 days.

Hookworm Disease in Cotton Mill Villages of Alabama and Georgia: A Study of the Value of Sanitation in a Soil Province Heavily Infested With Hookworms. D. L. Augustine, *Journal of Industrial Hygiene*, vol. 8, No. 9, September, 1926, pp. 382–391. (Abstract by D. L. Augustine.)

The value of sanitation as a principal factor in hookworm control is estimated by (1) a comparative study of the incidence and intensity of its infestation in sanitated mill villages and in the surrounding unsanitated rural districts from which the mill population is recruited and (2) by a comparative study of individuals of different lengths of mill residence in respect to their hookworm infestation and physical fitness. The disease caused by this parasite was found to be limited to those children of less than three years' residence in the mill village, and the number of light infestations and negative cases increased with the increasing years of residence in the sanitated mill villages.

The mean weight and also the mean hemoglobin were noticeably lower in children of less than three years' residence than in those who had lived in the village for longer periods of time. Normal hemoglobin values were found in children of four years' residence or longer at the cotton mills.

DEATHS DURING WEEK ENDED JANUARY 8, 1927

Summary of information received by telegraph from industrial insurance companies for week ended January 8, 1927, and corresponding week of 1926. (From the Weekly Health Index, January 13, 1927, issued by the Bureau of the Census, Department of Commerce)

	Week ended Jan. 8, 1927	Corresponding week, 1926
Policies in force	66, 407, 940	62, 646, 764
Number of death claims	11, 467	12, 931
Death claims per 1,000 policies in force, annual rate	9. 0	10. 8

Deaths from all causes in certain large cities of the United States during the week ended January 8, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, January 13, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Jan. 8, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Jan. 8, 1927 [2]
	Total deaths	Death rate [1]		Week ended Jan. 8, 1927	Corresponding week, 1926	
Total (68 cities)	8,344	14.7	15.3	898	861	[3] 74
Akron	41			10	11	108
Albany [4]	46	20.0	23.2	3	5	63
Atlanta	93			11	10	
White	47			4	8	
Colored	46			7	2	
Baltimore [4]	267	17.0	17.4	37	24	114
White	199		16.0	21	18	81
Colored	68	([5])	25.4	16	6	249
Birmingham	81	19.6	24.2	12	15	
White	38		20.4	5	8	
Colored	43	([5])	30.2	7	7	
Boston	226	14.9	16.5	22	27	61
Bridgeport	37			6	3	111
Buffalo	257	24.4	16.8	30	20	126
Cambridge	40	16.8	12.0	6	6	107
Camden	32	12.5	16.3	3	6	52
Canton	13	6.0	11.9	1	5	24
Chicago [4]	865	14.5	12.6	92	73	80
Cincinnati	160	20.2	21.4	17	11	106
Cleveland	213	11.3	13.0	24	30	64
Columbus	72	12.9	14.8	7	6	65
Dallas	56	14.0	14.4	4	7	
White	42		12.7	3	6	
Colored	14	([5])	25.1	1	1	
Dayton	54	15.6	11.8	4	7	66
Denver	104	18.7	13.5	8	5	
Des Moines	25	8.7	16.8	4	2	67
Detroit	357	14.0	12.7	70	59	111
Duluth	15	6.8	11.1	2	5	43
El Paso	51	23.3	20.1	11	6	
Erie	25			2	4	39
Fall River [4]	24	9.4	13.1	5	5	88
Flint	29	10.6	8.8	7	5	114
Fort Worth	41	13.0	11.8	4	7	
White	35		11.2	4	6	
Colored	6	([5])	16.5	0	1	
Grand Rapids	33	10.8	13.4	1	2	15
Houston	71			9	10	
White	47			6	9	
Colored	24			3	1	
Indianapolis	104	14.5	14.5	16	7	126
White	89		13.4	13	6	117
Colored	15	([5])	22.5	3	1	183
Jersey City	80	13.0	14.1	9	11	67
Kansas City, Kans	40	17.8	17.8	5	1	97
White	25		15.1	3	1	67
Colored	15	([5])	30.5	2	0	304
Kansas City, Mo	102	13.9	12.2	17	7	
Los Angeles	329			23	26	66
Louisville	82	13.4	14.4	9	10	77
White	66		13.0	8	9	78
Colored	16	([5])	22.2	1	1	70
Lowell	39	18.4	21.3	4	8	77
Lynn	34	16.9	17.5	4	1	106
Memphis	62	18.1	20.6	8	10	
White	30		16.5	4	5	
Colored	32	([5])	28.1	4	5	
Milwaukee	112	11.1	13.9	26	22	121
Minneapolis	115	13.6	12.9	8	12	45

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 64 cities.
[4] Deaths for week ended Friday, Jan. 7, 1927.
[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Indianapolis 11, Kansas City, Kans., 14, Louisville 17, Memphis 38, New Orleans 26, Norfolk 38, Richmond 32, and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended January 8, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926—Continued

City	Week ended Jan. 8, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Jan. 8, 1927
	Total deaths	Death rate		Week ended Jan. 8, 1927	Corresponding week, 1926	
Nashville [4]	59	22.3	18.3	6	8	----
New Bedford	33	14.4	12.6	3	5	52
New Haven	41	11.6	16.6	5	5	70
New Orleans	153	18.8	22.5	15	20	----
White	75	----	16.0	3	8	----
Colored	78	([5])	41.1	12	12	----
New York	1,513	13.2	15.1	138	149	57
Bronx boro	183	10.3	11.2	11	12	35
Brooklyn boro	509	11.7	12.9	45	55	47
Manhattan boro	620	17.8	20.6	67	62	79
Queens boro	149	9.6	11.8	13	15	56
Richmond boro	52	18.4	20.4	2	5	37
Newark, N. J	145	16.2	13.4	12	8	59
Norfolk	27	7.9	11.1	0	4	0
White	13	----	8.5	0	1	0
Colored	14	([5])	15.7	0	3	0
Oakland	86	16.8	16.2	3	6	35
Oklahoma City	40	----	----	1	3	----
Omaha	70	16.7	14.0	4	6	44
Paterson	37	13.4	16.4	3	4	53
Philadelphia	535	13.7	17.3	60	68	80
Pittsburgh	235	19.1	19.6	29	27	101
Portland, Oreg	69	----	----	4	2	42
Providence	82	15.2	17.8	8	9	68
Richmond	56	15.2	18.2	4	7	53
White	36	----	14.8	4	3	81
Colored	20	([5])	26.5	0	4	0
Rochester	70	11.3	13.8	4	8	34
St. Louis	237	14.7	14.3	18	14	----
St. Paul	63	13.1	14.3	1	6	9
Salt Lake City [4]	34	13.0	12.9	7	2	106
San Antonio	67	16.6	14.2	11	8	----
San Diego	41	18.6	19.4	7	1	149
San Francisco	205	18.6	21.5	4	9	25
Schenectady	29	16.3	16.3	2	0	60
Seattle	78	----	----	3	9	31
Somerville	21	10.7	15.1	3	1	108
Spokane	37	17.7	13.9	2	2	50
Springfield, Mass	41	14.5	12.6	7	6	108
Syracuse	61	16.1	13.5	8	4	103
Tacoma	32	15.6	13.8	2	4	47
Toledo	80	13.7	15.7	8	13	77
Trenton	50	19.0	18.7	8	2	139
Utica	41	20.8	16.2	2	3	46
Washington, D. C	165	15.9	17.6	15	8	87
White	103	----	----	10	7	84
Colored	62	([5])	----	5	1	92
Waterbury	23	----	----	3	4	71
Wilmington, Del	45	18.6	14.3	3	5	74
Worcester	57	15.2	18.4	5	4	60
Yonkers	22	9.6	12.1	2	3	45
Youngstown	43	13.3	10.7	9	5	126

[4] Deaths for week ended Friday, Jan. 7, 1927.

[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta 31, Baltimore 15, Birmingham 30, Dallas 15, Fort Worth 14, Houston 25, Indianapolis, 11, Kansas City, Kans., 14, Louisville 17, Memphis 38, New Orleans 26, Norfolk 38, Richmond 32, and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended January 15, 1927

ALABAMA

	Cases
Chicken pox	64
Diphtheria	72
Influenza	99
Lethargic encephalitis	1
Malaria	8
Measles	75
Mumps	5
Ophthalmia neonatorum	1
Pneumonia	83
Scarlet fever	18
Smallpox	78
Tuberculosis	54
Typhoid fever	7
Typhus fever	1
Whooping cough	55

ARIZONA

Chicken pox	38
Diphtheria	4
Measles	7
Mumps	2
Pneumonia	5
Poliomyelitis	1
Scarlet fever	12
Tuberculosis	40
Typhoid fever	1
Whooping cough	4

ARKANSAS

Cerebrospinal meningitis	1
Chicken pox	33
Diphtheria	12
Influenza	121
Malaria	21
Measles	11
Mumps	15
Pellagra	4
Scarlet fever	8
Smallpox	4

ARKANSAS—continued

Tuberculosis	1
Typhoid fever	11
Whooping cough	31

CALIFORNIA

Cerebrospinal meningitis:	
Azusa	1
Los Angeles	1
San Francisco	1
Chicken pox	416
Diphtheria	152
Influenza	41
Leprosy—Los Angeles	1
Lethargic encephalitis—Los Angeles	1
Measles	1,537
Mumps	216
Poliomyelitis:	
Long Beach	1
Los Angeles	1
Napa	1
Scarlet fever	280
Smallpox:	
Sonoma County	12
Scattering	11
Tuberculosis	123
Typhoid fever	14
Whooping cough	83

COLORADO

Cerebrospinal meningitis	1
Chicken pox	11
Diphtheria	5
Influenza	4
Measles	15
Mumps	3
Pneumonia	15
Scarlet fever	67
Smallpox	9
Tuberculosis	26
Vincent's angina	1

CONNECTICUT

	Cases
Cerebrospinal meningitis	2
Chicken pox	136
Diphtheria	31
German measles	5
Influenza	24
Measles	17
Mumps	49
Pneumonia (broncho)	34
Pneumonia (lobar)	32
Scarlet fever	101
Septic sore throat	4
Trachoma	1
Tuberculosis (all forms)	33
Typhoid fever	1
Whooping cough	47

DELAWARE

Diphtheria	8
Influenza	1
Measles	3
Pneumonia	2
Scarlet fever	47
Tuberculosis	6
Whooping cough	2

FLORIDA

Chicken pox	28
Diphtheria	30
Malaria	1
Measles	6
Mumps	11
Pneumonia	9
Poliomyelitis	2
Scarlet fever	16
Smallpox	40
Tuberculosis	10
Typhoid fever	15
Whooping cough	10

GEORGIA

Chicken pox	22
Diphtheria	32
Hookworm disease	2
Influenza	107
Malaria	6
Measles	56
Mumps	15
Pellagra	4
Pneumonia	27
Scarlet fever	24
Septic sore throat	16
Smallpox	71
Tuberculosis	18
Typhoid fever	4
Whooping cough	28

IDAHO

Chicken pox	21
Diphtheria	2
Measles	77
Mumps	16
Scarlet fever	30
Smallpox	6
Tuberculosis	1

ILLINOIS

	Cases
Cerebrospinal meningitis:	
Cook County	3
Morgan County	1
Chicken pox	497
Diphtheria	136
Influenza	88
Lethargic encephalitis:	
Cook County	2
Effingham County	1
Livingston County	1
Measles	1,137
Mumps	206
Pneumonia	445
Poliomyelitis—Knox County	1
Scarlet fever	334
Smallpox	27
Tuberculosis	299
Typhoid fever	8
Whooping cough	153

INDIANA

Anthrax	6
Chicken pox	182
Diphtheria	65
Influenza	139
Measles	90
Mumps	1
Pneumonia	16
Scarlet fever	210
Smallpox	129
Tuberculosis	32
Typhoid fever	3
Whooping cough	54

IOWA

Chicken pox	64
Diphtheria	36
Measles	199
Mumps	25
Pneumonia	3
Scarlet fever	75
Smallpox	16
Tuberculosis	4
Whooping cough	6

KANSAS

Cerebrospinal meningitis:	
Copeland	1
Independence	1
Chicken pox	189
Diphtheria	17
German measles	6
Influenza	22
Malaria	1
Measles	137
Mumps	19
Pneumonia	46
Poliomyelitis—New Salem	1
Ptomaine poisoning	1
Scarlet fever	134
Smallpox:	
Topeka	16
Scattering	24
Tetanus	2
Tuberculosis	34
Typhoid fever	8
Whooping cough	28

LOUISIANA

	Cases
Diphtheria	28
Influenza	21
Malaria	10
Measles	83
Pneumonia	34
Poliomyelitis	1
Scarlet fever	8
Smallpox	7
Tuberculosis	30
Typhoid fever	8
Whooping cough	6

MAINE

Chicken pox	66
Diphtheria	1
German measles	1
Influenza	5
Measles	201
Mumps	12
Pneumonia	22
Scarlet fever	31
Septic sore throat	2
Tuberculosis	3
Typhoid fever	1
Vincent's angina	2
Whooping cough	36

MARYLAND [1]

Cerebrospinal meningitis	1
Chicken pox	169
Diphtheria	75
Influenza	96
Measles	20
Mumps	16
Pneumonia (broncho)	62
Pneumonia (lobar)	62
Rat bite fever	1
Scarlet fever	106
Septic sore throat	1
Tetanus	1
Tuberculosis	67
Typhoid fever	10
Whooping cough	105

MASSACHUSETTS

Actinomycosis	1
Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	425
Conjunctivitis (suppurative)	5
Diphtheria	109
German measles	13
Influenza	12
Lethargic encephalitis	2
Measles	197
Mumps	357
Ophthalmia neonatorum	35
Pellagra	1
Pneumonia (lobar)	178
Poliomyelitis	2
Scarlet fever	495
Septic sore throat	3
Tetanus	1
Trachoma	2
Tuberculosis (pulmonary)	104

MASSACHUSETTS—continued

Tuberculosis (other forms)	36
Typhoid fever	12
Whooping cough	141

MICHIGAN

Diphtheria	139
Measles	91
Pneumonia	216
Scarlet fever	395
Smallpox	45
Tuberculosis	43
Typhoid fever	11
Whooping cough	130

MINNESOTA

Chicken pox	247
Diphtheria	36
Dysentery	1
Influenza	3
Measles	130
Pneumonia	1
Scarlet fever	254
Smallpox	4
Tuberculosis	56
Typhoid fever	5
Whooping cough	31

MISSISSIPPI

Cerebrospinal meningitis	1
Diphtheria	21
Scarlet fever	14
Smallpox	9
Typhoid fever	2

MISSOURI

(Exclusive of Kansas City)

Cerebrospinal meningitis	1
Chicken pox	86
Diphtheria	53
Influenza	2
Measles	171
Pellagra	1
Pneumonia	8
Poliomyelitis	1
Scarlet fever	119
Smallpox	4
Tetanus	2
Tuberculosis	29
Typhoid fever	6
Whooping cough	28

MONTANA

Cerebrospinal meningitis	6
Chicken pox	17
Diphtheria	7
German measles	3
Measles	67
Mumps	15
Scarlet fever	141
Smallpox	6
Trachoma	2
Tuberculosis	1
Whooping cough	5

[1] Week ended Friday.

NEBRASKA

	Cases
Chicken pox	61
Diphtheria	6
German measles	13
Influenza	5
Measles	73
Mumps	36
Pneumonia	3
Scarlet fever	52
Smallpox	23
Tuberculosis	2
Typhoid fever	1
Whooping cough	18

NEW JERSEY

Cerebrospinal meningitis	1
Chicken pox	441
Diphtheria	134
Influenza	28
Measles	62
Pneumonia	179
Poliomyelitis	1
Scarlet fever	266
Trachoma	1
Typhoid fever	5
Whooping cough	184

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	1
Chicken pox	577
Diphtheria	112
Dysentery	1
German measles	146
Lethargic encephalitis	1
Measles	801
Mumps	319
Pneumonia	353
Poliomyelitis	1
Scarlet fever	281
Septic sore throat	13
Smallpox	16
Typhoid fever	16
Vincent's angina	22
Whooping cough	248

NORTH CAROLINA

Chicken pox	163
Diphtheria	43
German measles	6
Measles	161
Scarlet fever	66
Smallpox	99
Typhoid fever	5
Whooping cough	389

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Cerebrospinal meningitis—Canadian County	1
Chicken pox	37
Diphtheria	34
Influenza	274
Malaria	10
Measles	37
Pneumonia	97
Scarlet fever	58

OKLAHOMA—continued

	Cases
Smallpox	31
Typhoid fever	11
Whooping cough	13

OREGON

Cerebrospinal meningitis	5
Chicken pox	51
Diphtheria	19
Influenza	23
Measles	55
Mumps	39
Pneumonia	[2] 9
Scarlet fever	80
Septic sore throat	2
Smallpox:	
Klamath County	17
Scattering	9
Tuberculosis	[2] 3
Typhoid fever	9
Whooping cough	4

PENNSYLVANIA

Cerebrospinal meningitis—Philadelphia	2
Chicken pox	978
Diphtheria	213
German measles	40
Impetigo contagiosa	21
Measles	860
Mumps	203
Ophthalmia—Philadelphia	2
Pneumonia	93
Poliomyelitis—Luzerne County	1
Scabies	13
Scarlet fever	508
Tetanus—Pittsburgh	1
Tuberculosis	103
Typhoid fever	40
Whooping cough	333

RHODE ISLAND

Chicken pox	9
Diphtheria	16
German measles	3
Measles	2
Mumps	7
Ophthalmia neonatorum	1
Scarlet fever	14
Tuberculosis	6
Typhoid fever	1
Whooping cough	10

SOUTH CAROLINA

Chicken pox	119
Dengue	4
Diphtheria	21
Hookworm disease	13
Influenza	914
Malaria	90
Measles	49
Paratyphoid fever	4
Pellagra	22
Poliomyelitis	2
Scarlet fever	12
Smallpox	16
Tuberculosis	43
Typhoid fever	12
Whooping cough	92

[2] Deaths.

SOUTH DAKOTA

	Cases
Chicken pox	17
Measles	20
Mumps	1
Pneumonia	8
Scarlet fever	35
Smallpox	3
Whooping cough	4

TENNESSEE

Cerebrospinal meningitis—Nashville	1
Chicken pox	81
Diphtheria	39
Influenza	83
Malaria	5
Measles	136
Mumps	3
Pellagra	5
Pneumonia	44
Scarlet fever	51
Smallpox	13
Tetanus	1
Trachoma	1
Tuberculosis	23
Typhoid fever	21
Whooping cough	67

TEXAS

Chicken pox	41
Diphtheria	76
Influenza	408
Leprosy	1
Measles	19
Mumps	18
Pneumonia	22
Scarlet fever	76
Smallpox	406
Tuberculosis	39
Typhoid fever	10
Whooping cough	17

UTAH

Chicken pox	55
Diphtheria	8
Measles	491
Mumps	34
Pneumonia	10
Scarlet fever	17
Smallpox	3
Whooping cough	4

VERMONT

Chicken pox	37
Diphtheria	2
Measles	91
Mumps	27
Scarlet fever	3
Whooping cough	35

WASHINGTON

Cerebrospinal meningitis	8
Chicken pox	155
Diphtheria	21
German measles	62

WASHINGTON—continued

	Cases
Measles	361
Mumps	44
Pneumonia	5
Scarlet fever	116
Smallpox	61
Tuberculosis	23
Typhoid fever	4
Whooping cough	19

WEST VIRGINIA

Cerebrospinal meningitis—Raleigh County	1
Chicken pox	123
Diphtheria	39
Influenza	61
Measles	98
Scarlet fever	81
Smallpox	4
Tuberculosis	9
Typhoid fever	8
Whooping cough	122

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	4
Chicken pox	117
Diphtheria	23
German measles	1
Lethargic encephalitis	1
Measles	51
Mumps	33
Pneumonia	23
Scarlet fever	48
Smallpox	1
Tuberculosis	31
Whooping cough	67
Scattering:	
Cerebrospinal meningitis	2
Chicken pox	262
Diphtheria	20
German measles	5
Influenza	35
Measles	763
Mumps	128
Pneumonia	23
Poliomyelitis	1
Scarlet fever	154
Smallpox	28
Trachoma	1
Tuberculosis	11
Typhoid fever	4
Whooping cough	91

WYOMING

Cerebrospinal meningitis:	
Hot Springs County	2
Washakie County	1
Chicken pox	8
Diphtheria	5
German measles	11
Measles	66
Pneumonia (lobar)	1
Scarlet fever	35

Reports for Week Ended January 8, 1927

DISTRICT OF COLUMBIA	Cases
Chicken pox	49
Diphtheria	20
Influenza	2
Measles	2
Pellagra	1
Pneumonia	50
Scarlet fever	28
Tuberculosis	23
Whooping cough	10
NORTH DAKOTA	
Chicken pox	16
Diphtheria	7
German measles	1
Measles	151
Mumps	1
Pneumonia	15
Scarlet fever	88
Smallpox	10
Trachoma	4
Tuberculosis	4
Typhoid fever	1
Whooping cough	5

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1926										
Arkansas	0	39	310	281	15	21	1	64	3	64
Hawaii Territory	0	33	7	----	63	----	0	1	0	8
December, 1926										
Arizona	1	20	----	----	49	1	0	39	1	4
Connecticut	2	122	47	----	225	----	2	288	0	8
Georgia	2	172	229	61	79	5	0	103	190	28
Massachusetts	15	505	57	----	358	----	8	1,539	0	94
Michigan	0	590	27	----	412	----	5	1,212	81	24
North Dakota	0	37	----	----	916	----	0	248	62	1
Tennessee	7	210	283	24	83	12	2	270	32	156

November, 1926	Cases
Chicken pox:	
Arkansas	55
Hawaii Territory	4
Conjunctivitis (follicular): Hawaii Territory	500
Hookworm disease:	
Arkansas	6
Hawaii Territory	14
Leprosy: Hawaii Territory	6
Mumps: Arkansas	23
Ophthalmia neonatorum: Arkansas	1
Paratyphoid fever: Arkansas	3
Tetanus: Hawaii Territory	1
Trachoma:	
Arkansas	4
Hawaii Territory	285
Whooping cough:	
Arkansas	145
Hawaii Territory	1
December, 1926	
Anthrax: Massachusetts	2
Chicken pox:	
Arizona	34
Connecticut	566
Georgia	112
Massachusetts	1,718
Michigan	1,181
North Dakota	139
Tennessee	253
Conjunctivitis (infectious):	
Connecticut	3
Georgia	1
Dengue: Georgia	2
Dysentery:	
Georgia	4
Tennessee	2
German measles:	
Connecticut	10
Massachusetts	46
North Dakota	21
Hookworm disease: Georgia	37
Lead poisoning: Massachusetts	5
Lethargic encephalitis:	
Connecticut	4
Massachusetts	3
Michigan	20
Ophthalmia neonatorum: Massachusetts	134
Mumps:	
Arizona	5
Connecticut	61
Georgia	17
Massachusetts	810
Michigan	183
North Dakota	37
Tennessee	15
Paratyphoid fever:	
Arizona	4
Georgia	2
Tennessee	2
Rabies in animals: Connecticut	7

	Cases
Rabies in man: Tennessee	2
Septic sore throat:	
Connecticut	10
Georgia	63
Massachusetts	18
Michigan	20
Tetanus:	
Georgia	3
Massachusetts	2
Trachoma:	
Arizona	11
Connecticut	1
Massachusetts	4
North Dakota	70
Trichinosis:	
Connecticut	1
Massachusetts	1
Typhus fever: Georgia	6
Whooping cough:	
Arizona	15
Connecticut	163
Georgia	93
Massachusetts	604
Michigan	512
North Dakota	19
Tennessee	251

RODENT PLAGUE AT LOS ANGELES, CALIF.

A rat caught December 11, 1926, at 3205 South Main Street, Los Angeles, Calif., proved positive for plague.

The last previous plague-infected rat encountered in Los Angeles was on November 6, 1925. Rodent destruction has been carried out energetically and continuously from that date until the present time and will be continued. The number of rats examined in the laboratory has averaged more than 500 per week during the past two years of plague-control work.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended January 1, 1927, 41 States reported 1,967 cases of diphtheria. For the week ended January 2, 1926, the same States reported 1,586 cases of this disease. Ninety-eight cities, situated in all parts of the country and having an aggregate population of more than 30,160,000, reported 1,028 cases of diphtheria for the week ended January 1, 1927. Last year for the corresponding week they reported 749 cases. The estimated expectancy for these cities was 1,216 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-seven States reported 5,853 cases of measles for the week ended January 1, 1927, and 7,426 cases of this disease for the week ended January 2, 1926. Ninety-eight cities reported 1,295, cases of measles for the week this year, and 3,480 cases last year.

Poliomyelitis.—The health officers of 42 States reported 17 cases of poliomyelitis for the week ended January 1, 1927. The same States reported 29 cases for the week ended January 2, 1926.

Scarlet fever.—Scarlet fever was reported for the week as follows: Forty-one States—this year, 4,374 cases; last year, 3,608 cases; 98 cities—this year, 1,547 cases; last year, 1,274 cases; estimated expectancy, 1,113 cases.

Smallpox.—For the week ended January 1, 1927, 41 States reported 734 cases of smallpox. Last year for the corresponding week they reported 456 cases. Ninety-eight cities reported smallpox for the week as follows: 1927, 68 cases; 1926, 135 cases; estimated expect-

ancy, 74 cases. No deaths from smallpox were reported by these cities for the week this year.

Typhoid fever.—Three hundred and thirty-eight cases of typhoid fever were reported for the week ended January 1, 1927, by 41 States. For the corresponding week of 1926, the same States reported 321 cases of this disease. Ninety-eight cities reported 69 cases of typhoid fever for the week this year and 55 cases for the corresponding week last year. The estimated expectancy for these cities was 54 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia were reported for the week by 92 cities, with a population of more than 29,400,000, as follows: 1927, 1,019 deaths; 1926, 1,108 deaths.

City reports for week ended January 1, 1927

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1917 is included. In obtaining the estimated expectancy the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	75,333	33	2	1	0	0	1	1	6
New Hampshire:									
Concord	22,546	0	0	0	0	0	38	0	0
Manchester	83,097	0	3	1	0	0	0	0	1
Vermont:									
Barre	10,008	1	0	0	0	0	16	0	0
Burlington	24,089	1	0	1	0	0	0	1	3
Massachusetts:									
Boston	779,620	85	66	31	4	2	21	46	30
Fall River	128,993	2	5	3	1	1	0	8	2
Springfield	142,065	6	4	4	0	0	0	2	2
Worcester	190,757	12	5	7	0	0	0	9	7
Rhode Island:									
Pawtucket	69,760	1	2	0	0	0	0	0	3
Providence	267,918	0	10	11	2	1	1	0	5
Connecticut:									
Bridgeport	(1)	3	9	9	3	1	1	1	4
Hartford	160,197		8						
New Haven	178,927	20	4	0	0	0	0	0	10
MIDDLE ATLANTIC									
New York:									
Buffalo	538,016	41	24	14		0	2	1	13
New York	5,873,356	185	228	174	60	29	7	124	208
Rochester	316,786	10	11	8		1	2	2	3
Syracuse	182,003	11	9	3		0	6	0	5
New Jersey:									
Camden	128,642	0	5	27	0	0	2	0	2
Newark	452,513	20	19	14	12	0	1	15	23
Trenton	132,020	0	8	3	1	0	0	0	5
Pennsylvania:									
Philadelphia	1,979,364	114	81	84		7	9	19	70
Pittsburgh	631,563	34	26	16		5	14	0	28
Reading	112,707	11	5	0		0	1	4	3

[1] No estimate made.

City reports for week ended January 1, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	409,333	20	14	11	1	3	0	25	20
Cleveland	936,485	97	41	69	1	0	5	2	33
Columbus	279,836	8	5	6	0	2	1	0	6
Toledo	287,380	49	13	9	0	3	4	0	9
Indiana:									
Fort Wayne	97,846	5	5	7	0	0	6	0	2
Indianapolis	358,819	53	13	13	0	0	4	0	12
South Bend	80,091	4	1	0	0	0	12	0	3
Terre Haute	71,071	1	2	8	0	1	1	0	1
Illinois:									
Chicago	2,995,239	93	136	65	15	7	270	37	60
Peoria	81,564	0	1	1	0	0	43	4	4
Springfield	63,923	20	2	1	1	1	47	0	4
Michigan:									
Detroit	1,245,824	58	70	66	3	4	0	14	40
Flint	130,316	7	10	8	0	0	1	0	5
Grand Rapids	153,698	6	5	0	0	1	1	0	2
Wisconsin:									
Kenosha	50,891	15	2	0	0	0	54	3	0
Madison	46,385	28	2	1	0	0	3	0	0
Milwaukee	509,192	44	23	23	3	3	30	11	8
Racine	67,707	13	3	6	0	0	0	5	0
Superior	39,671		0						
WEST NORTH CENTRAL									
Minnesota:									
Duluth	110,502	3	2	0	0	0	2	0	5
Minneapolis	425,435	135	20	18	0	0	1	0	6
St. Paul	246,001	17	17	6	0	1	1	0	10
Iowa:									
Davenport	52,469	3	1	1	0		10	0	
Des Moines	141,441	0	5	5	0		0	0	
Sioux City	76,411	5	2	4	0		1	1	
Waterloo	36,771	17	0	0	0		0	0	
Missouri:									
Kansas City	367,481	21	13	5	2	2	7	0	19
St. Joseph	78,342	4	4	0	0	0	0	0	3
St. Louis	821,543	25	53	47	1	0	5	13	
North Dakota:									
Fargo	26,403	2	0	0	0	0	1	0	0
South Dakota:									
Aberdeen	15,036	8	0	0	0		0	0	
Sioux Falls	30,127	0	1	1	0		0	0	
Nebraska:									
Lincoln	60,941	7	2	6	0	0	2	0	5
Omaha	211,768	13	5	0	0	0	11	4	6
Kansas:									
Topeka	55,411		2						
Wichita	88,367	22	6	1	0	0	0	0	5
SOUTH ATLANTIC									
Delaware:									
Wilmington	122,049	1	3	0	0	0	0	0	6
Maryland:									
Baltimore	796,296	61	33	34	23	6	8	5	36
Cumberland	33,741	0	1	0	0	0	0	0	0
Frederick	12,035	0	0	1	0	0	0	0	1
District of Columbia:									
Washington	497,906	43	18	20	0	0	1	0	14
Virginia:									
Lynchburg	30,395	8	1	3	0	1	0	0	1
Norfolk	(1)	2	3	4	0	0	2	7	3
Richmond	186,403	6	8	4	0	1	50	1	7
Roanoke	58,208	0	2	1	0	0	1	0	5
West Virginia:									
Charleston	49,019	17	1	2	0	0	1	0	2
Wheeling	56,208	5	2	2	0	0	0	0	2
North Carolina:									
Raleigh	30,371	7	1	1	0	0	1	0	1
Wilmington	37,061	3	0	1	0	0	0	1	0
Winston-Salem	69,031	4	1	1	0	0	1	0	2

[1] No estimate made.

City reports for week ended January 1, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC—CON.									
South Carolina:									
Charleston	73,125	0	1	1	22	1	0	0	4
Columbia	41,225	1	1	0	0	0	2	0	0
Greenville	27,311	3	0	0	0	0	0	0	2
Georgia:									
Atlanta	(1)	8	4	17	28	0	23	1	9
Brunswick	16,809	1	0	0	0	0	0	1	0
Savannah	93,134	0	1	0	12	0	1	0	2
Florida:									
Miami	69,754	1		3	0	0	0	0	5
St. Petersburg	26,847		1			0			2
Tampa	94,743	2	1	1	0	0	5	0	2
EAST SOUTH CENTRAL									
Kentucky:									
Covington	58,309	1	1	2	0	0	0	0	0
Louisville	305,935	20	9	7	1	1	1	0	12
Tennessee:									
Memphis	174,533	9	6	6	0	0	6	0	7
Nashville	136,220	0	3	2	0	2	0	0	5
Alabama:									
Birmingham	205,670	13	3	16	7	2	7	9	10
Mobile	65,955	1	1	1	0	0	1	0	3
Montgomery	46,481	3	1	2	0	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	31,643	1	2	1	0		0	0	
Little Rock	74,216	0	1	1	0		1	0	2
Louisiana:									
New Orleans	414,493	1	14	9	1	2	0	0	10
Shreveport	57,857	0	2	0	0	0	0	2	0
Oklahoma:									
Oklahoma City	(1)	0	2	3	10	0	0	0	3
Texas:									
Dallas	194,450	1	10	22	1	1	2	0	8
Galveston	48,375	0	1	0	0	0	0	0	5
Houston	164,954	1	4	13	0	0	0	0	3
San Antonio	198,069	0	3	6	0	0	0	0	6
MOUNTAIN									
Montana:									
Billings	17,971	2	0	0	0	0	15	0	0
Great Falls	29,883	2	1	0	0	0	1	0	0
Helena	12,037	0	0	0	0	0	0	0	0
Missoula	12,668	1	1	0	0	0	0	1	1
Idaho:									
Boise	23,042	2	0	0	0	0	7	0	0
Colorado:									
Denver	280,911	12	11	9		4	98	0	12
Pueblo	43,787	8	3	1	0	1	0	0	5
New Mexico:									
Albuquerque	21,000	0	1	0	0	0	3	1	2
Arizona:									
Phoenix	38,669	0	1	1	0	3	0	0	3
Utah:									
Salt Lake City	130,948	15	3	5	0	0	268	0	4
Nevada:									
Reno	12,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	(1)	40	7	6	0		0	27	
Spokane	108,897	15	4	1	0		105	0	
Tacoma	104,455	14	3	4	0	0	1	0	5
Oregon:									
Portland	282,383	9	9	4	1	0	1	0	8
California:									
Los Angeles	(1)	56	38	35	13	0	52	18	45
Sacramento	72,260	3	2	2	0	0	44	7	4
San Francisco	557,530	19	23	10	2	0	58	7	2

[1] No estimate made.

City reports for week ended January 1, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	2	0	0	0	0	0	0	0	0	7	24
New Hampshire:											
Concord	1	1	0	0	0	0	0	0	0	0	8
Manchester	1	0	0	0	0	1	0	1	1	0	16
Vermont:											
Barre	1	0	0	0	0	0	0	0	0	3	0
Burlington	0	1	0	0	0	0	0	0	0	8	7
Massachusetts:											
Boston	50	99	0	0	0	15	1	9	0	22	255
Fall River	3	2	0	0	0	2	0	1	0	6	31
Springfield	8	4	0	0	0	0	0	0	0	0	41
Worcester	11	11	0	0	0	2	0	0	0	1	45
Rhode Island:											
Pawtucket	1	0	0	0	0	0	0	0	0	0	15
Providence	8	7	0	0	0	2	0	0	0	0	49
Connecticut:											
Bridgeport	7	18	0	0	0	6	0	0	0	0	36
Hartford	8	----	0	----	----	----	0	----	----	----	----
New Haven	9	2	0	0	0	1	0	0	0	1	49
MIDDLE ATLANTIC											
New York:											
Buffalo	24	11	1	0	0	6	2	2	0	14	125
New York	181	292	1	2	0	[1] 114	12	7	3	42	1,602
Rochester	13	16	0	0	0	4	1	1	2	5	72
Syracuse	12	10	0	1	0	1	1	1	0	6	49
New Jersey:											
Camden	4	0	0	0	0	1	0	1	0	0	29
Newark	18	34	0	0	0	13	1	0	0	21	132
Trenton	3	1	0	0	0	4	0	0	0	5	35
Pennsylvania:											
Philadelphia	67	80	0	0	0	32	4	3	1	14	570
Pittsburgh	34	22	1	0	0	5	1	0	0	12	201
Reading	1	5	0	0	0	1	0	0	0	4	22
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	12	17	0	0	0	7	1	2	0	1	140
Cleveland	33	42	1	2	0	11	2	1	0	4	205
Columbus	10	15	0	0	0	4	0	0	0	7	87
Toledo	14	14	1	0	0	8	0	1	0	24	67
Indiana:											
Fort Wayne	3	3	0	0	0	0	1	0	0	0	17
Indianapolis	9	19	6	7	0	7	0	0	0	11	106
South Bend	4	3	1	1	0	0	0	0	0	0	----
Terre Haute	2	6	1	1	0	2	0	0	0	1	22
Illinois:											
Chicago	124	105	1	0	0	40	6	2	0	32	761
Peoria	6	2	1	0	0	0	0	0	0	0	19
Springfield	2	3	1	0	0	2	0	0	0	4	27
Michigan:											
Detroit	87	85	4	0	0	24	2	1	0	44	311
Flint	8	16	0	0	0	0	0	0	0	2	24
Grand Rapids	9	12	0	0	0	2	0	0	0	2	35
Wisconsin:											
Kenosha	1	5	1	0	0	0	0	0	0	5	5
Madison	3	5	0	0	0	0	0	0	0	3	5
Milwaukee	29	22	2	0	0	8	1	0	0	53	122
Racine	6	2	1	0	0	0	0	1	0	2	11
Superior	2	----	2	----	----	----	0	----	----	----	----
WEST NORTH CENTRAL											
Minnesota:											
Duluth	6	11	0	0	0	1	0	0	0	0	34
Minneapolis	46	57	8	1	0	4	1	0	0	2	89
St. Paul	23	17	10	0	0	6	0	1	0	11	64
Iowa:											
Davenport	2	6	1	0	----	----	0	0	----	0	----
Des Moines	6	4	1	0	----	----	0	1	----	0	----
Sioux City	2	5	0	0	----	----	0	0	----	0	----
Waterloo	3	0	0	0	----	----	0	0	----	4	----

[1] Pulmonary tuberculosis only.

City reports for week ended January 1, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—contd.											
Missouri:											
Kansas City	13	21	0	4	0	12	1	0	0	3	131
St. Joseph	2	3	0	0	0	1	0	0	0	0	37
St. Louis	35	40	1	1	0	12	2	0	0	12	269
North Dakota:											
Fargo	2	9	0	0	0	0	0	0	0	0	4
South Dakota:											
Aberdeen	0	3	0	0	-	-	0	0	-	0	-
Sioux Falls	2	4	0	0	-	-	0	0	-	0	-
Nebraska:											
Lincoln	2	4	0	0	0	0	0	0	0	0	14
Omaha	5	15	5	3	0	2	1	1	0	0	49
Kansas:											
Topeka	2	-	0	-	-	-	1	-	-	-	-
Wichita	4	10	0	0	0	2	0	0	0	1	21
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	31	0	0	0	1	0	0	0	0	31
Maryland:											
Baltimore	27	28	0	0	0	11	3	7	3	36	275
Cumberland	0	0	0	0	0	1	0	0	0	0	9
Frederick	0	1	0	0	0	1	0	0	0	4	2
District of Columbia:											
Washington	22	23	0	0	0	10	3	5	0	6	138
Virginia:											
Lynchburg	1	3	0	0	0	0	0	0	0	0	11
Norfolk	2	6	0	0	0	1	0	1	0	4	-
Richmond	5	4	0	0	0	2	0	0	0	3	48
Roanoke	1	5	0	1	0	1	0	1	0	0	17
West Virginia:											
Charleston	2	1	0	0	0	2	0	0	0	2	19
Wheeling	1	1	0	0	0	0	0	0	0	3	13
North Carolina:											
Raleigh	1	3	1	0	0	0	0	0	0	6	9
Wilmington	0	1	0	0	0	0	0	0	0	2	10
Winston-Salem	2	2	1	0	0	1	0	0	0	17	12
South Carolina:											
Charleston	0	0	0	0	0	1	0	0	0	0	26
Columbia	0	2	0	0	0	0	0	0	0	0	-
Greenville	0	0	0	1	0	0	0	0	0	3	7
Georgia:											
Atlanta	4	13	1	18	0	3	0	1	0	11	73
Brunswick	0	0	0	0	0	0	0	0	0	0	5
Savannah	0	2	0	1	0	5	1	3	0	0	28
Florida:											
Miami	-	1	-	0	0	3	-	0	0	0	41
St. Petersburg	0	-	0	-	0	1	0	-	0	-	21
Tampa	0	2	0	1	0	1	0	0	0	0	19
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	0	0	0	0	2	0	0	0	0	23
Louisville	5	10	0	0	0	1	0	2	0	21	102
Tennessee:											
Memphis	4	13	1	5	0	6	0	0	0	5	68
Nashville	3	5	1	0	0	3	0	0	1	1	41
Alabama:											
Birmingham	4	5	1	3	0	5	0	1	0	6	85
Mobile	0	1	1	1	0	0	0	1	0	0	28
Montgomery	0	0	0	0	0	0	0	0	0	0	-
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	4	0	0	-	-	0	0	-	0	-
Little Rock	2	1	0	0	-	1	0	0	-	0	-
Louisiana:											
New Orleans	5	8	1	0	0	15	2	3	3	4	14[4]
Shreveport	1	2	1	0	0	2	0	0	0	0	1[7]

City reports for week ended January 1, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL—contd.											
Oklahoma:											
Oklahoma City	2	8	1	0	0	2	0	0	0	1	23
Texas:											
Dallas	3	15	0	1	0	3	0	0	0	0	51
Galveston	0	3	0	0	0	3	0	0	0	0	25
Houston	2	0	1	4	0	6	0	1	1	0	71
San Antonio	1	2	0	0	0	7	0	0	0	0	59
MOUNTAIN											
Montana:											
Billings	1	0	0	0	0	0	0	0	0	0	4
Great Falls	1	12	1	0	0	1	0	1	0	0	7
Helena	0	0	0	1	0	0	0	1	0	0	7
Missoula	1	9	0	0	0	0	0	0	0	0	6
Idaho:											
Boise	2	6	0	0	0	0	0	0	0	0	3
Colorado:											
Denver	10	70	3	0	0	5	0	0	0	3	87
Pueblo	3	1	0	0	0	2	0	1	0	0	15
New Mexico:											
Albuquerque	0	3	0	0	0	10	0	0	0	0	19
Arizona:											
Phoenix	1	0	0	0	0	8	0	0	0	0	26
Utah:											
Salt Lake City	3	0	2	0	0	1	0	0	1	0	37
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	5
PACIFIC											
Washington:											
Seattle	8	6	3	0	----	----	1	1	----	3	----
Spokane	5	21	4	1	----	----	0	0	----	2	----
Tacoma	3	3	1	6	0	0	0	1	0	3	25
Oregon:											
Portland	7	12	7	3	0	4	0	0	1	0	83
California:											
Los Angeles	19	48	3	1	0	24	2	4	0	10	327
Sacramento	2	2	1	0	0	2	0	0	0	0	28
San Francisco	11	14	1	0	0	15	1	0	0	7	180

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Vermont:									
Burlington	0	1	0	0	0	0	0	0	0
Massachusetts:									
Boston	1	1	0	0	0	0	0	1	0
Springfield	1	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	4	6	4	3	0	0	1	0	0
Rochester	0	0	1	0	0	0	0	0	0
Pennsylvania:									
Philadelphia	2	0	0	0	0	0	0	0	0
Pittsburgh	0	0	0	1	0	0	0	0	0

City reports for week ended January 1, 1927—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (Infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	0	0	0	0	0	0	0	1	0
Cleveland	0	0	0	2	0	0	0	0	0
Columbus	1	0	0	1	0	0	0	0	0
Illinois:									
Chicago	4	2	0	0	0	0	1	0	0
Michigan:									
Detroit	1	0	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee	4	3	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	0	1	2	0	0	0	0	0
Virginia:									
Norfolk	1	0	0	0	0	0	0	0	0
North Carolina:									
Winston-Salem	0	0	0	0	0	0	0	1	1
South Carolina:									
Charleston	0	0	0	0	0	0	0	1	0
Georgia:									
Atlanta [1]	0	0	0	0	0	1	0	0	0
Savannah	0	0	1	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Louisville	0	0	1	0	0	0	0	0	0
Tennessee:									
Memphis	0	0	0	1	0	1	0	0	0
Alabama:									
Birmingham	1	1	1	1	0	0	0	0	0
Mobile	0	0	1	0	0	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	1	1	0	0	0
Texas:									
San Antonio	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Montana:									
Missoula	1	1	0	0	0	0	0	0	0
PACIFIC									
California:									
Los Angeles	0	1	0	0	0	0	0	0	0

[1] Typhus fever: 2 cases at Atlanta, Ga.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended January 1, 1927, compared with those for a like period ended January 2, 1926. The population figures used in computing the rates are approximate estimates as of July 1, 1925 and 1926, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had an estimated aggregate population of nearly 30,000,000 in 1925 and nearly 30,500,000 in 1926. The 95 cities reporting deaths had more than 29,200,000 estimated population in 1925 and more than 29,730,000 in 1926. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, November 28, 1926, to January 1, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1925–26 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Dec. 5, 1925	Dec. 4, 1926	Dec. 12, 1925	Dec. 11, 1926	Dec. 19, 1925	Dec. 18, 1926	Dec. 26, 1925	Dec. 25, 1926	Jan. 2, 1926	Jan. 1, 1927
101 cities	165	224	159	[2] 201	[3] 158	189	122	[4] 166	132	[5] 178
New England	120	173	103	163	132	161	89	161	141	[6] 169
Middle Atlantic	137	176	138	160	147	167	108	139	126	171
East North Central	164	267	158	223	154	216	150	[7] 185	132	[8] 194
West North Central	272	209	239	193	178	129	184	113	160	[9] 167
South Atlantic	207	242	192	239	192	218	94	[10] 213	129	175
East South Central	116	301	121	[2] 275	89	145	74	[11] 208	110	187
West South Central	264	318	176	267	[3] 241	258	128	[12] 217	150	224
Mountain	231	228	166	246	176	164	166	137	111	137
Pacific	122	270	191	240	177	253	88	226	127	156

MEASLES CASE RATES

101 cities	342	175	427	[2] 199	[3] 515	190	416	[4] 208	613	[5] 224
New England	1,526	102	1,953	165	2,082	229	1,579	168	2,406	[6] 199
Middle Atlantic	338	37	451	23	518	24	382	22	558	22
East North Central	243	145	293	218	479	242	537	[7] 243	753	[8] 261
West North Central	18	113	25	129	35	109	70	77	61	[9] 60
South Atlantic	516	49	539	54	570	90	240	[10] 57	470	180
East South Central	37	26	21	[2] 83	79	21	116	[11] 48	105	78
West South Central	4	142	4	146	[3] 9	82	9	[12] 7	0	13
Mountain	9	2,840	37	3,214	28	2,349	28	2,777	83	3,541
Pacific	55	704	52	617	77	607	36	884	47	701

SCARLET FEVER CASE RATES

101 cities	211	242	223	[2] 238	[3] 232	279	203	[4] 256	225	[5] 267
New England	216	326	187	340	192	388	240	248	304	[6] 368
Middle Atlantic	166	156	172	177	189	214	146	212	168	234
East North Central	261	239	288	236	286	242	234	[7] 252	249	[8] 243
West North Central	405	435	476	431	454	413	438	371	509	[9] 387
South Atlantic	119	182	152	175	154	201	157	[10] 153	140	240
East South Central	163	244	110	[2] 149	116	249	168	[11] 296	100	176
West South Central	106	211	141	142	[3] 88	237	97	[12] 171	119	151
Mountain	240	929	157	801	277	1,111	213	974	250	892
Pacific	215	267	185	232	243	386	182	305	210	253

SMALLPOX CASE RATES

101 cities	13	14	21	[2] 11	[3] 20	16	18	[4] 15	24	[5] 12
New England	0	0	0	0	0	0	0	0	0	[6] 0
Middle Atlantic	0	1	0	1	1	1	0	0	1	1
East North Central	13	21	33	7	26	11	25	[7] 16	23	[8] 8
West North Central	18	48	18	38	37	46	20	28	18	[9] 19
South Atlantic	4	19	8	19	12	26	10	[10] 31	25	41
East South Central	11	0	5	[2] 22	11	78	0	[11] 56	74	47
West South Central	13	9	9	9	[3] 23	43	9	[12] 39	22	22
Mountain	0	18	102	18	37	0	9	18	37	9
Pacific	105	35	124	43	113	40	130	43	152	22

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1925, and 1926, respectively.
[2] Covington, Ky., not included.
[3] Shreveport, La., not included.
[4] Terre Haute, Ind., Superior, Wis., Lynchburg, Va., Norfolk, Va., Greenville, S. C., Louisville, Ky., and New Orleans, La., not included.
[5] Hartford, Conn., Superior, Wis., and Topeka, Kans., not included.
[6] Hartford, Conn., not included.
[7] Terre Haute, Ind., and Superior, Wis., not included.
[8] Superior, Wis., not included.
[9] Topeka, Kans., not included.
[10] Lynchburg, Va., Norfolk, Va., and Greenville, S. C., not included.
[11] Louisville, Ky., not included.
[12] New Orleans, La., not included.

Summary of weekly reports from cities, November 28, 1926, to January 1, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1925–26—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Dec. 5, 1925	Dec. 4, 1926	Dec. 12, 1925	Dec. 11, 1926	Dec. 19, 1925	Dec. 18, 1926	Dec. 26, 1925	Dec. 25, 1926	Jan. 2, 1926	Jan. 1, 1927
101 cities	19	10	20	[2] 13	[3] 16	12	9	[4] 10	10	[5] 12
New England	22	7	22	2	10	31	10	40	7	[6] 26
Middle Atlantic	26	9	25	18	17	8	11	5	7	7
East North Central	8	6	12	3	13	[7] 5	7	[7] 4	6	[8] 5
West North Central	10	10	12	4	14	10	4	10	6	[9] 4
South Atlantic	19	17	23	24	17	19	12	[10] 16	12	34
East South Central	53	42	26	[2] 44	26	21	5	[11] 24	32	21
West South Central	40	9	31	13	[3] 28	22	9	[12] 7	48	17
Mountain	0	9	18	9	9	9	18	0	9	27
Pacific	14	16	14	16	17	24	8	22	8	16

INFLUENZA DEATH RATES

95 cities	11	14	13	[2] 17	[3] 14	14	12	[4] 15	15	[5] 17
New England	10	7	10	9	14	7	12	7	12	[6] 13
Middle Atlantic	10	13	12	12	8	13	9	14	10	21
East North Central	6	9	11	14	17	12	8	[7] 10	8	[8] 15
West North Central	6	4	6	15	4	15	6	11	15	[9] 6
South Atlantic	17	21	8	34	10	26	17	[10] 33	19	17
East South Central	42	42	47	[2] 44	53	5	32	[11] 56	32	26
West South Central	39	43	44	43	[3] 36	43	48	[12] 30	44	14
Mountain	18	46	18	36	0	9	28	27	28	46
Pacific	4	11	4	11	18	7	15	4	40	0

PNEUMONIA DEATH RATES

95 cities	144	122	130	[2] 129	[3] 149	138	136	[4] 139	186	[5] 164
New England	180	118	132	135	158	149	165	151	213	[6] 176
Middle Atlantic	161	150	132	139	148	147	145	166	188	179
East North Central	142	87	116	103	132	119	101	[7] 110	145	[8] 134
West North Central	54	74	84	118	133	120	99	91	127	[9] 117
South Atlantic	159	105	173	154	200	126	205	[10] 147	267	186
East South Central	131	135	194	[2] 171	215	130	142	[11] 104	263	192
West South Central	155	161	208	151	[3] 184	184	174	[12] 145	276	151
Mountain	157	209	176	109	120	273	203	164	268	260
Pacific	98	153	76	114	98	124	87	149	138	199

[2] Covington, Ky., not included.
[3] Shreveport, La., not included.
[4] Terre Haute, Ind., Superior, Wis., Lynchburg, Va., Norfolk, Va., Greenville, S. C., Louisville, Ky., and New Orleans, La., not included.
[5] Hartford, Conn., Superior, Wis., and Topeka, Kans., not included.
[6] Hartford, Conn., not included.
[7] Terre Haute, Ind., and Superior, Wis., not included.
[8] Superior, Wis., not included.
[9] Topeka, Kans., not included.
[10] Lynchburg, Va., Norfolk, Va., and Greenville, S. C., not included.
[11] Louisville, Ky., not included.
[12] New Orleans, La., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1925 and 1926, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1925	1926	1925	1926
Total	101	95	29,900,058	30,427,598	29,221,531	29,733,613
New England	12	12	2,176,124	2,206,124	2,176,124	2,206,124
Middle Atlantic	10	10	10,346,970	10,476,970	10,346,970	10,476,970
East North Central	16	16	7,481,656	7,655,436	7,481,656	7,655,436
West North Central	12	10	2,550,024	2,589,131	2,431,253	2,468,448
South Atlantic	21	21	2,716,070	2,776,070	2,716,070	2,776,070
East South Central	7	7	993,103	1,004,953	993,103	1,004,953
West South Central	8	6	1,184,057	1,212,057	1,078,198	1,103,695
Mountain	9	9	563,912	572,773	563,912	572,773
Pacific	6	4	1,888,142	1,934,084	1,434,245	1,469,144

FOREIGN AND INSULAR

THE FAR EAST

Report for week ended December 18, 1926.—The following report for the week ended December 18, 1926, was transmitted by the eastern bureau of the secretariat of the health section of the League of Nations, located at Singapore, to the headquarters at Geneva:

Maritime towns	Plague		Cholera		Smallpox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Arabia: Aden	0	0	0	0	1	0
British India:						
Bombay	----	0	----	0	6	4
Madras	----	0	----	0	9	1
Calcutta	----	0	----	51	97	62
Rangoon	----	0	----	1	0	0
Negapatam	----	0	----	9	0	1
Ceylon: Colombo	1	1	0	0	0	0
Straits Settlements:						
Singapore	0	0	5	2	2	1
Dutch East Indies:						
Cheribon	0	0	0	0	0	0
Surabaya	1	1	0	0	0	0
Macassar	0	0	0	0	0	0
Siam: Bangkok	0	0	1	0	3	1
French Indo-China:						
Turane	0	0	8	6	0	0
Haiphong	0	0	----	66	0	0
China: Shanghai	0	0	0	0	1	0
Mauritius: Port Louis	8	7	0	0	0	0
Reunion: St. Denis	1	0	0	0	0	0

Telegraphic reports from the following maritime towns indicated that no case of plague, cholera, or smallpox was reported during the week:

ASIA

Arabia.—Jeddah, Kamaran, Perim.
Iraq.—Basrah.
Persia.—Mohammerah, Bender-Abbas, Bushire.
British India.—Karachi, Chittagong, Cochin, Vizagapatam, Tuticorin.
Portuguese India.—Nova Goa.
Federated Malay States.—Port Swettenham.
Straits Settlements.—Penang.
Dutch East Indies.—Samarang, Batavia, Sabang, Banjermasin, Palembang, Belawan-Deli, Padang, Tarakan, Balikpapan, Samarinda, Pontianak.
Sarawak.—Kuching.
British North Borneo.—Sandakan, Jesselton, Kudat, Tawao.
Portuguese Timor.—Dilly.
French Indo-China.—Saigon.
Philippine Islands.—Manila, Iloilo, Jolo, Cebu, Zamboanga.
China.—Amoy.
Hongkong.
Macao.
Formosa.—Keelung.
Japan.—Yokohama, Osaka, Nagasaki, Niigata, Tsuruga, Hakodate, Shimonoseki, Moji, Kobe.
Korea.—Chemulpo, Fusan.
Manchuria.—Harbin, Antung, Yingkow, Changchun, Mukden.
Kwantung.—Port Arthur, Dairen.

AUSTRALASIA AND OCEANIA

Australia.—Adelaide, Melbourne, Sydney, Brisbane, Rockhampton, Townsville, Port Darwin, Broome, Fremantle, Carnarvon, Thursday Island.
New Guinea.—Port Moresby.
New Britain, Mandated Territory.—Rabaul and Kokopo.
New Zealand.—Auckland, Wellington, Christchurch, Invercargill, Dunedin.
New Caledonia.—Noumea.
Fiji.—Suva.
Hawaii.—Honolulu.
Society Islands.—Papeete.

AFRICA

Egypt.—Port Said, Suez, Alexandria.
Anglo-Egyptian Sudan.—Port Sudan, Suakin.
Eritrea.—Massaua.
French Somaliland.—Jibuti.
British Somaliland.—Berbera.
Italian Somaliland.—Mogadiscio.
Kenya.—Mombasa.
Zanzibar.—Zanzibar.
Tanganyika.—Dar-es-Salaam.
Seychelles.—Victoria.
Madagascar.—Majunga, Tamatave.
Portuguese East Africa.—Mozambique, Beira Lourenço-Marques.
Union of South Africa.—East London, Port Elizabeth, Cape Town, Durban.

Reports had not been received in time for distribution from—

Dutch East Indies.—Menado.
U. S. S. R.—Vladivostok.

ALGERIA

Plague—Oran—November 21-30, 1926.—During the 10 days ended November 30, 1926, 25 cases of plague with 22 deaths were reported at Oran, Algeria.

Plague—Oran and vicinity.—Plague has been reported in Algeria as follows: December 2, 1926, at Oran, 2 cases, 1 death; previously reported as suspect; on the same date, at Tarafaraoui, vicinity of Oran, 3 fatal cases. December 3, at Oran, 3 new cases; at Tarafaraoui, cases, 3, deaths, 1. On December 9, 1926, the occurrence of 4 new cases with 1 death and fatal termination in 2 cases previously reported as suspect.

BRAZIL

Mortality—Plague—Plague-infected rats found in interior—Rat proofing—State of Rio Grande do Sul—1925.—During the year 1925, 26,805 deaths were reported in the State of Rio Grande do Sul, of which 1,400 were stillbirths, giving a death rate of 11.40 per 1,000 for the year, as compared with 11.41 for the year 1924.

Plague.—Three fatal cases of plague were reported, occurring in the port of Rio Grande. Plague-infected rats were reported found in the interior of the State, in 2 towns. It was stated that all new buildings under construction were required to be made ratproof.

Other communicable diseases.—Cerebrospinal meningitis, 3 deaths, as compared with 7 deaths in the previous year and 17 deaths in the year 1923. Tuberculosis, 2,243 deaths, as compared with 2,438 in 1924. Typhoid fever and paratyphoid, deaths, 680, of which 102 occurred in the capital city, Porto Alegre (population, 52,421).

BRITISH SOUTH AFRICA

Smallpox—Northern Rhodesia—November 27-December 3, 1926.—During the week ended December 3, 1926, 200 cases of smallpox in natives were reported in Northern Rhodesia. Population—European 4,424; native, 1,106,534.

CANADA

Communicable diseases—Week ended December 25, 1926.—The Canadian Ministry of Health reports cases of certain communicable diseases for the week ended December 25, 1926, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario [1]	Manitoba	Saskatchewan	Alberta	Total
Influenza	26							26
Smallpox					2	6	12	20
Typhoid fever		1	75			1	1	78

[1] No report received.

Communicable diseases—Province of Ontario—December, 1926.—During the month of December, 1926, communicable diseases were reported in the Province of Ontario, Canada, as follows:

Disease	December, 1926		December, 1925	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis		3	2	
Chancroid	1			
Chicken pox	1,247		597	
Diphtheria	317	23	266	25
German measles	19		19	
Gonorrhea	117		148	
Influenza		17		31
Lethargic encephalitis	1	1	5	2
Measles	1,095	1	489	
Mumps	147		295	
Pneumonia		165		197
Poliomyelitis	2			
Scarlet fever	534	5	558	13
Septic sore throat	3	1	10	
Smallpox	106		32	
Syphilis	86		74	
Tuberculosis	113	50	166	62
Typhoid fever	42	6	53	5
Whooping cough	410	4	113	7

Smallpox.—During the month of December, 1926, 106 cases of smallpox were reported in the Province of Ontario, Canada, the greatest number of cases according to locality being as follows: Toronto, 30; Peterboro, 18; Belleville, 12.

CUBA

Communicable diseases—Habana—December, 1926.—During the month of December, 1926, communicable diseases were reported at Habana, Cuba, as follows:

Disease	New cases	Deaths	Remaining under treatment, Dec. 31, 1926
Beriberi	2		2
Chicken pox	6		3
Diphtheria	13	1	7
Leprosy	1	1	11
Malaria [1]	105		43
Measles	9	1	5
Paratyphoid fever	2	1	
Scarlet fever	6		4
Typhoid fever [1]	51	11	75

[1] Many of these cases from the interior.

EGYPT

Plague—December 3–16, 1926.—Plague has been reported in Egypt as follows: December 3 to 9, 1926—two cases occuring at two localities in the district of Kafr el Sheikh; December 10 to 16, 1926—one case, occurring in the district of Tanta.

Summary—January 1–December 16, 1926.—From January 1 to December 16, 1926, 150 cases of plague were reported in Egypt; corresponding period, 1925—138 cases.

GREAT BRITAIN

Health week—Hull, England.—Information has been received under date of October 28, 1926, in regard to the health week held at Hull, England, during the week ended October 23, 1926, and which was visited by approximately 45,000 persons. The exhibits presented were entirely educational in character and were intended to demonstrate the value of sanitary science against disease and insanitary conditions. The principal exhibits were on the subjects of cancer, tuberculosis, and child welfare. The exhibit of the Central Council for Infant and Child Welfare consisted of about 2,000 objects, including posters, specimens of children's clothing, etc. This exhibit, with the sunlight clinic, showing the effect of ultra-violet rays, used primarily for children affected with rickets, and the exhibits in regard to food adulterants, atmospheric pollution, and cancer, were of major interest. Films were extensively used for demonstration of the rat menace, the winter harborage of flies, influenza, physical education, central heating, and the preparation of dried milk. Scarlet fever and typhoid fever prevalence in Hull for the period 1885–1925 is shown as follows:

	Scarlet fever		Typhoid fever	
	Cases	Deaths	Cases	Deaths
1885	[1]	38	[1]	38
1895	1,062	38	281	49
1905	675	26	128	22
1915	598	5	94	14
1925	419	4	26	3

[1] Figures not available.

General death rates per 1,000 for Hull, 1871 to 1925

Year	Death rate	Year	Death rate
1871–1880	23.7	1921	13.0
1881–1890	19.6	1922	14.4
1891–1900	19.1	1923	11.4
1901–1910	16.5	1924	13.5
1911–1920	15.9	1925	13.2

GREECE

Plague—Pravi—November 27, 1926.—The occurrence of a fatal case of plague was reported November 27, 1926, at Pravi, Province of Drama-Kavala, Greece.

JAMAICA

Smallpox (alastrim)—November 28–December 25, 1926.—During the four weeks ended December 25, 1926, 34 cases of smallpox, reported as alastrim, were notified in the island of Jamaica, exclusive of the parish and city of Kingston.

Other communicable diseases.—During the period under report other communicable diseases were reported in the island of Jamaica as follows:

Disease	Cases		Disease	Cases	
	Kingston	Other localities		Kingston	Other localities
Chicken pox	1	5	Puerperal fever		2
Dysentery		67	Tuberculosis	7	35
Erysipelas		1	Typhoid fever	19	89
Lethargic encephalitis		1			

Population, island, 916,620; Kingston, census of 1921, 62,707.

MADAGASCAR

Plague—October 16–31, 1926.—During the period October 16 to 31, 1926, 135 cases of plague with 121 deaths were reported in the island of Madagascar. The distribution according to type of disease was as follows: Cases—Bubonic, 37; pneumonic, 48; septicemic, 50.

PORTUGAL

Plague—Lisbon—November, 1926.—Under date of December 16, 1926, the occurrence of three cases of plague was reported at Lisbon, Portugal, during the period November 23 to 26, 1926.

Cases and dates of onset.—Cases and dates of onset of the disease were reported as follows: (1) Employee in a coal dealer's shop, at Belem, a suburb of Lisbon, with date of onset November 18 and fatal termination November 24, 1926. (2) Case reported November 26, with onset November 9. The patient was a grocer and was believed to have gone on board a lighter from the steamship *Leander* from Antwerp, to purchase potatoes, which he stored in a basement of the house in which the first case occurred. (3) Case with fatal termination in a contact with the first case. The first and second cases lodged in the basement in which the potatoes imported on the *Leander* were stored.

UNION OF SOUTH AFRICA

Plague—Cape Province—November 21–27, 1926.—During the week ended November 27, 1926, a case of plague was reported in De Aar District, Cape Province, occurring in a native, a contact with the case reported during the previous week on Farm Blauwboschkuilen, Hanover District, Cape Province.

Smallpox—Natal.—During the same period a case of smallpox was reported in the Durban vicinity, State of Natal, making a total from October 14, the beginning of the outbreak, of 62 cases with 16 deaths.

YUGOSLAVIA

Communicable diseases—November, 1926.—During the month of November, 1926, communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	38	6	Rabies	4	1
Cerebrospinal meningitis	6	4	Scarlet fever	686	99
Diphtheria	218	34	Smallpox	1	1
Dysentery	169	24	Tetanus	17	10
Glanders	1		Typhoid fever	644	74
Lethargic encephalitis	3	1	Typhus fever	9	
Measles	772	3	Whooping cough	345	12

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended January 21, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Tsingtao	Nov. 28–Dec. 11			Present.
India				Oct. 24–30, 1926: Cases, 1,488; deaths, 904.
Rangoon	Nov. 21–27	1	1	

PLAGUE

Algeria:				
Oran	Nov. 21–30	25	22	
Do	Dec. 1–10	7		
Tarafaraoui	Dec. 2–9	10	7	Vicinity of Oran.
Ceylon:				
Colombo	Nov. 28–Dec. 4	1		
Egypt				Dec. 3–9, 1926: Cases, 2. Jan. 1–Dec. 9, 1926: Cases, 149; corresponding period, 1925; cases, 138.
Kafr el Sheikh	Dec. 3–9	2		
Tanta	Dec. 16–20	1		
Greece:				
Pravi	Nov. 27	1	1	Province of Drama-Kavala.
India				Oct. 24–30, 1926: Cases, 1,437; deaths, 857.
Bombay	Nov. 21–27	1	1	
Madras Presidency	Nov. 7–13	75	32	
Rangoon	Nov. 21–27	3	3	
Java:				
Batavia	do	8	8	Province.
Madagascar				Oct. 16–31, 1926: Cases, 135; deaths, 121.
Province—				
Analalava	Oct. 16–31	1	1	Bubonic.
Itasy	do	2	2	Bubonic, 1; pneumonic, 1.
Maevatanana	do	10	10	Bubonic, 5; pneumonic, 5.
Moramanga	do	21	15	Bubonic, cases, 10; deaths, 4; pneumonic, cases, 7; deaths, 7; septicemic, cases, 4; deaths, 4.
Tamatave	do	3	1	Bubonic.
Tananarive—				
Tananarive Town	do	13	13	Bubonci, 4; pneumonic, 4; septicemic, 5.
Other localities	do	85	79	Bubonic, cases, 13; deaths, 9; pneumonic, cases, 36; deaths, 34; septicemic, cases, 36; deaths, 36.
Portugal:				
Lisbon	Nov. 23–26	3	2	In suburb of Belem.
Union of South Africa:				
Cape Province—				
De Aar District	Nov. 21–27	1		Native. Occurring on farm and in contact with previous case on Farm Blauwboschkuilen.

[1] From medical officers of the Public Health Service, American consuls and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended January 21, 1927—Continued

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Arabia:				
Aden	Dec. 12-18	1		Imported.
British South Africa:				
Northern Rhodesia				Nov. 27-Dec. 3, 1926: Cases, 200. In natives.
Canada				Dec. 19-25, 1926: Cases, 20.
Alberta	Dec. 19-25	12		
Manitoba	do	2		
Ontario—				
Kingston	Jan. 1-7	1		
Ottawa	Dec. 26-31	1		
Toronto	Dec. 19-25	3		
Do	Jan. 1-7	5		
Saskatchewan	do	6		
China:				
Chungking	Nov. 21-27			Present.
Chosen:				
Seoul	Nov. 1-30	2		
Great Britain:				
England and Wales—				
Sheffield	Nov. 28-Dec. 18	22		
India				Oct. 24-30, 1926: Cases, 530; deaths, 152.
Bombay	Nov. 21-Dec. 4	7	6	
Madrus	Dec. 5-11	3		
Jamaica				Nov. 26-Dec. 25, 1926: Cases, 34. Reported as alastrim.
Java:				
Surabaya	Nov. 7-13	2	1	
Mexico:				
Ciudad Juarez	Dec. 21-27		1	
Mexico City	Dec. 16-22	1		Including municipalities in Federal District.
Siam				Nov. 21-27, 1926: Cases, 37; deaths, 2. Apr. 1-Nov. 27, 1926: Cases, 691; deaths, 258.
Bangkok	Nov. 21-27	1		
Union of South Africa:				
Cape Province—				
Stutterheim district	Nov. 21-27			Outbreaks.
Natal—				
Durban municipality	do	1		Oct. 14, 1926, to date: Cases, 62; deaths, 16. Durban and vicinity. Hindus and natives.
Orange Free State—				
Bothaville district	do			Outbreaks.
Yugoslavia				November, 1926: 1 case, 1 death.

TYPHUS FEVER

China:				
Antung	Nov. 22-Dec. 5	4		
Chosen:				
Seoul	Nov. 1-30	1		
Greece:				
Athens	do	4		
Yugoslavia				November, 1926: Cases, 9.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to 14, 1927[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Chungking	Nov. 14–20			Present.
Tsingtao	Nov. 14–27			Do.
French Settlements in India	Aug. 29–Oct. 2	93	64	
India	Oct. 10–23			Cases, 2,658; deaths, 1,508.
Calcutta	Oct. 31–Nov. 20	84	69	
Indo-China	July 1–31			Cases, 2,204; deaths, 1,350. European, 1.
Saigon	Oct. 31–Nov. 13	2	2	
Province—				
Annam	July, 1926	215	178	July, 1925: Cases, none.
Cambodia	do	571	352	One European, fatal. July, 1925: Cases, 3.
Cochin-China	do	390	317	July, 1925: Cases, 6; deaths, 2.
Kwang-Chow-Wan	do	220		July, 1925: Cases, 22; deaths, 15.
Laos	do	24	21	July, 1925: One case.
Tonkin	do	784	482	July, 1925; Cases, 3; deaths, 1.
Philippine Islands:				
Manila	Oct. 31–Nov. 6	1		
Siam	do			Case, 1.
Do	Apr. 1–Nov. 20			Cases, 7,714; deaths, 5,080.
Bangkok	Oct. 31–Nov. 20	6	1	
Straits Settlements	July 25–Aug. 21		11	

PLAGUE

Algeria:				
Algiers	Reported Nov. 26	1		
Oran	Nov. 21–28	21	18	
Tarafaraoui	do		2	Near Oran.
Brazil:				
Rio de Janeiro	Nov. 28–Dec. 4	2	2	
Ceylon:				
Colombo	Nov. 14–27	1	1	Two plague rodents.
China:				
Nanking	Oct. 31–Nov. 20			Prevalent.
Ecuador:				
Guayaquil	Nov. 1–30	12	3	Rats taken, 24,887; found infected, 77.
Egypt	Jan. 1–Dec. 2			Cases, 147.
Alexandria	Nov. 19–Dec. 2	2		
Tanta District	Nov. 19–25	2		
Greece	Nov. 1–30	10	1	Athens and Piræus.
Athens	do		3	
Patras	Nov. 28–Dec. 4		1	
India	Oct. 10–23			Cases, 3,552; deaths, 2,063.
Madras	Oct. 17–23	83	45	
Rangoon	Nov. 14–20	3	2	
Indo-China	July 1–31			Cases, 24; deaths, 10.
Province—				
Cambodia	July, 1926	6	6	July, 1925: Cases, 16; deaths, 13.
Cochin-China	do	8	4	July, 1925: No case.
Kwang-Chow-Wan	do	10		July, 1925: Cases, 22; deaths, 15.
Java:				
Batavia	Nov. 7–20	9	9	Province.
Surabaya	Oct. 24–Nov. 6	8	8	
Nigeria	Aug. 1–31	187	164	
Senegal	July 1–31	178	162	
Diourbel	Nov. 20–30	12	11	
Syria:				
Beirut	Nov. 11–20	1		
Union of South Africa:				
Cape Province—				
Hanover District	Nov. 14–20	1		Native. On farm.
Orange Free State—				
Hoopstad District	Nov. 7–13	1	1	Do.

[1] From medical officers of the Public Health Service, American consuls, and other sources. For reports received from June 26 to Dec. 31, 1926, see Public Health Reports for Dec. 31, 1926. The tables of epidemic diseases are terminated semiannually and new tables begun.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to 14, 1927—Continued

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria	Sept. 21-Oct. 20	160		
Belgium	Oct. 1-10	1		
Brazil:				
Bahia	Oct. 30-Nov. 20	3	3	
Para	Oct. 31-Nov. 6		1	
Pernambuco	Oct. 17-Dec. 4	56	2	
Rio de Janeiro	Nov. 14-27	80	41	
Sao Paulo	Aug. 23-Oct. 3	10	8	
Canada	Dec. 5-18			Cases, 97.
Alberta	do	14		
Calgary	Nov. 28-Dec. 25	12		
Manitoba	Dec. 5-18	4		
Winnipeg	Dec. 19-25	1		
Ontario	Dec. 5-18	68		
Ottawa	Dec. 12-18	4		
Toronto	Dec. 14-20	11		
Saskatchewan	Dec. 5-18	11		
China:				
Chungking	Nov. 7-20			Present.
Foochow	Nov. 7-13			Do.
Hankow	Nov. 6-30			Do.
Swatow	Nov. 21-27			Do.
Chosen	Aug. 1-31	33	10	
Egypt:				
Cairo	June 11-Aug. 26	27	4	
Estonia	Oct. 1-30	2		
France	Sept. 1-30	66		
French Settlements in India	Aug. 29-Sept. 25	40	40	
Gold Coast	Aug. 1-31	41	5	
Great Britain:				
England and Wales	Nov. 14-Dec. 11			Cases, 1,300.
Newcastle-on-Tyne	Dec. 5-11	2		
Greece	Nov. 1-30	20		
India	Oct. 10-23			Cases, 1,335; deaths, 384.
Bombay	Nov. 7-13	4	2	
Calcutta	Oct. 31-Nov. 20	16	14	
Madras	Nov. 21-Dec. 4	4	1	
Indo-China	July 1-31			Cases, 29; deaths, 10.
Province—				
Annam	July, 1926	6	3	July, 1925: Cases, 39; deaths, 7.
Cambodia	do	11	4	July, 1925: Cases, 62; deaths, 18.
Cochin-China	do	6	1	July, 1925: Cases, 12; deaths, 7.
Laos	do	3	1	July, 1925: Cases, none.
Tonkin	do	3	1	July, 1925: Cases, 31; deaths, 3.
Iraq:				
Baghdad	Oct. 31-Nov. 6	1	1	
Basra	Nov. 7-13	1	1	
Italy	Aug. 29-Sept. 11	4		
Jamaica	Dec. 5-11	20		Reported as alastrim.
Japan:				
Kobe	Nov. 14-20	1		
Java:				
Batavia	do	2		Province.
Surabaya	Oct. 24-Nov. 6	6		
Mexico:				
Chihuahua	Dec. 31			Several cases; mild.
Ciudad Juarez	Dec. 14-20		1	
Mexico City	Nov. 21-Dec. 11	4		Including municipalities in Federal District.
San Luis Potosi	Nov. 12-Dec. 18		3	
Torreon	Nov. 28-Dec. 25		7	
Poland	Oct. 11-30			Cases, 30.
Portugal:				
Lisbon	Nov. 22-Dec. 18	37	3	
Rumania	Jan. 1-Sept. 30	7	1	
Siam	Apr. 1-Nov. 20			Cases, 1,301; deaths, 511.
Bangkok	Oct. 31-Nov. 20	12	3	
Tunisia	Oct. 1-20	1		
Union of South Africa:				
Natal—				
Durban District	Nov. 7-20	8		Including Durban Municipality. Total from date of outbreak; cases, 56; deaths, 11
Orange Free State	Nov. 14-27			Outbreaks.
Transvaal	Nov. 7-20	2		Europeans.
Johannesburg	Nov. 14-20	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to 14, 1927—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria	Sept. 21–Oct. 20	12		
Bulgaria	July 1–Sept. 30	221	24	
Chile:				
Valparaiso	Nov. 21–Dec. 4	2		
China:				
Chefoo	Oct. 24–Nov. 6			Present.
Chosen	Aug. 1–31	5		
Greece	Nov. 1–30	12	1	
Italy	Aug. 29–Sept. 11	1		
Lithuania	Sept. 1–30	12	2	
Mexico:				
Mexico City	Dec. 5–11	3		Including municipalities in Federal District.
Palestine:				
Haifa	Nov. 23–29	2		
Jaffa	do	2		
Nazareth	Nov. 16–29	2		
Poland	Oct. 11–Nov. 13			Cases, 82; deaths, 8.
Rumania	Aug. 1–Sept. 30	72	3	
Russia	Aug. 1–31	1,156		
Tunisia	Oct. 1–20	3		
Union of South Africa	Oct. 1–30			Cases, 71; deaths, 8.
Cape Province	do	47	7	
Do	Nov. 14–20			Outbreaks.
East London	Nov. 21–27	1		Native. Imported.
Natal	Oct. 1–31	1		
Orange Free State	do	22	1	
Transvaal	do	1		

YELLOW FEVER

Gold Coast	Aug. 1–31	7	2	
Senegal:				
Diourbel	Dec. 6	1	1	
Rufisque	Nov. 27	1	1	In European.
Upper Volta:				
Gaoua district	Oct. 25	2		